

American Aviation

The Independent Voice of American Aeronautics

MARCH 1, 1945

Let's Start Building

THERE is a lot of talk these days about providing for 60,000,000 jobs after the war. The government and the public are going to depend upon aviation to furnish a goodly percentage of these jobs either directly or indirectly. To the layman aviation offers the greatest single ray of hope for expansion.

But if the airplane is going to do its part in providing jobs, the men who now make the decisions in industry and government will have to do some tall thinking.

The thinking must be not alone on lines of the airplane itself, but in jobs created because the airplane has opened new avenues of trade and opportunity. This is true both domestically and internationally.

And if this forward thinking is to move ahead, the shackles of fear and protection must be loosened or this country will find itself wholly unprepared to meet the postwar challenge which the airplane has offered.

Airlines, especially, must unloosen the chains of legal proceedings and legal maneuvers which have bound new route cases and expansion plans to a ludicrous level of late. Domestic airlines cannot forever follow a policy of objecting automatically every time another carrier wants to make a new stop somewhere, and Pan American Airways cannot conceivably justify its protective and restrictive maneuvers in the light of public needs and public opportunities which will be required after the war. Nor can it regard hurtfully as anti-Pan American every criticism that it, and it alone, should be the sole guardian or sole instrument of the U. S. abroad.

(Turn to page 4)



TWA Vice President

E. O. Cocks, general traffic manager of Transcontinental and Western Air since June 1942 has been elected vice president of traffic. He has been with TWA for 16 years.

Late Bulletins

DC-7 Nearly Finished

A prototype of the DC-7, commercial postwar transport, preliminary details of which were released last October, is now nearing completion at Douglas Aircraft Co. and is expected to fly by early summer.

CINA Meets in Paris

CINA (International Committee for Air Navigation) opened its first meeting since before the war in Paris Feb. 28. Subcommittees will study the result of the Chicago International Conference. The CAA sent Eugene Sibley, Chief of the Communications Division, to the meeting.

Advice from Industry **NOT TO BE TAKEN**
The aircraft and airline industries will begin placing their suggestions on current and conversion needs directly before the War Production Board this month when the Industry Advisory Committees now being formed hold their first meetings.

The Advisory Committee representing manufacturers will meet in Washington March 20 and the Committee representing the airlines will meet March 21. Both groups are being formed to work with the new Aircraft Industry Division of WPB which began functioning on the first of the year under Henry Nelson.

Both branches of the industry were invited to nominate members of the Committees, personnel of which is nearing completion. Coordination of the suggestions presented by both groups is expected to help solve many mutual industry problems.

Navy Assignment: Considerable speculation has been stirred up in the aircraft industry by the revelation that Grover Loening, the War Production Board's eminent aircraft consultant, has been given a special mission with the Navy on loan to Artemus Gates, Assistant Secretary for Air. Loening left Washington for the West Coast last fortnight and no one would officially divulge the nature of the survey which he will make for the Navy. It can be assumed, however, that he will come back with some recommendations which definitely will interest the aircraft manufacturers.

New Helicopter Engines: While present helicopters are powered with conventional type aircraft engines, such considerations as rotor speeds, positioning of the engine and new cooling problems are causing designers to wonder whether a special type power plant is not needed for rotary wing aircraft. At least one large engine manufacturer is now working along these lines.

Wright Strong Leader: T. P. Wright, CAA Administrator, is building a strong reputation in his new job and is delving into CAA problems with real thoroughness. The job is admittedly one of the toughest in the whole Government aviation picture. Skeptics who wondered if Wright could emerge successfully from the mass of personality and bureau trou-

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"M"

STANDS FOR VICTORY...TOO

"That may sound like a trick remark to you folks on the home front, but I'm a lad who ought to know, so just let me 'shoot the breeze' a bit, and you'll see what I mean.

"Back around the turn of the year, I'm chauffeur of a Glory Wagon flying Purple Heart Corner on a milk run that isn't helping the Axis Supply Lines any. With forty-one successful missions over this same area... I guess we kind of overlooked that swell cover the pea-shooters boys had been giving us... Then all Hell broke loose around our ears.

"For next time over, a weird looking bunch of bandits blitzed through us, and dished out such a mauling that the guys who got back sounded as wacky as the tail of the farmer who saw his first giraffe and yelped 'There ain't no sich animal'.

"So we learned about jet-propelled Jerries the hard way and the beatings we took the next few trips did little but swell the flak-happy circle... for nothing we had seemed to be the answer.

"But sooner than we'd any right to hope for, we found out... and so did Mr. Goering's smug thugs... Flying top cover on our next mission came an escort of new THUNDERBOLT M's* that A-2 had been so hush-hush about... They looked just like any other 47's to my jaundiced eye... and probably to the eager beavers from Berlin.

"We were both wrong... but this was their turn to take it, and no foolin'.

"My geese were just lining out for their run, when down came the 'jets' again... but what a kick we got when right on the tail of these super-doopers streaked those THUNDERBOLT M's... diving three feet for every two of the startled Heinies.

"Well, THUNDERBOLT fire power is no secret... and with this amazing increase in speed, it was just too bad for those new toys of the 'Supermen'... The 'jets' that were left, kept right on going and they haven't troubled us too much since... The Luftwaffe had thrown its Sunday punch... and found out again... that we had a wallop to more than match it."

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AVIATION PRODUCTS

Editorial

(Continued from page 1)

Laws and quasi-judicial proceedings cannot, in the long run, bar the natural and inevitable economic development that must come and which the public expects. The Civil Aeronautics Act was not designed as a cloak to hide from sight purely economic needs and public requirements and to avoid all financial risk. The airlines are instrumentalities of the public—the servants of those who want to use air transport—and are not wholly-contained private enterprises which can do entirely as they wish without regard to the national interest.

How big is the aviation future? Certainly men like Bill Piper who struggled through the lean prewar years have faith and confidence in an ever-expanding competitive market for civil flying. Certainly men like Glenn Martin and Don Douglas and Dutch Kindelberger and Bob Gross know that initiative, resourcefulness, imagination and a broad national interest is needed if our manufacturing enterprise is to be maintained in the future.

But what of air transportation? The scrapping, the legal blockades, the innumerable objections, the endless arguing of infinitely trivial details, all of which feature every prehearing conference and every hearing before the CAB, make one wonder if the main goal is to keep someone from expanding and serving the public rather than to pitch in and build an air system that will mean something in terms of jobs and airplanes.

Most ridiculous are the squabbles arising every time an airline wants to serve a city on or near its route. If a community wants the service, why shouldn't the service be given so long as direct parallel routes are avoided? Why shouldn't the approach be from the public angle rather than from the purely automatic protective reasoning of individual companies. Genuine objections should be made, certainly, but today the lawyers pounce in with objections almost before they know what the case is about.

In the international field we are falling far short in our thinking and the obstructionists today may have to have some tall answers to give when the final accounting for expansion and jobs—especially for returning airmen—is made. Men like Senator Owen Brewster, the Maine Republican, who says Americans are suckers when dealing with the British but who is proving to be quite a sucker himself by falling prey to what the British would like to have us do, is being both presumptuous and impertinent in his fanatical and obstructive fight for a monopoly for foreign air commerce.

Mark it well that this country has entered a new era with the war. Mark it well that everything this country did internationally in aviation was the smallest of peanuts in contrast to what is being done by our military services and what can be done after the war.

Did you say the international field was big? During the month of December, 1944, the Army Air Transport Command in its foreign operations only—domestic and ferrying excluded—performed 274,100,000 passenger miles. All domestic airlines performed 214,566,356 passenger miles in the same month.

Is it generally known by Senator Brewster and the other obstructionists, and is it known by the public, that an American transport plane leaves one side or

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Trends

(Continued from page 1)

bles in CAA now admit that he has come through with exceptional skill. One thing in his favor from the start was his long experience in the industry and his intimate knowledge of engineering and regulatory matters. He couldn't be fooled by old-timers; he knew the answers from first-hand knowledge.

Why Not Crudge for BOAC?: The British evidently are surveying all of their available aviation personnel for top air transport jobs in British Overseas Airways. They've even considered top men in the Dominions but have decided to draw upon their own reserves. Various Americans have wondered why Vernon Crudge, regional BOAC manager based at Baltimore, isn't picked for a top spot. Personable, able, young and imaginative, Crudge has made a good impression on U. S. air transport people who consider him much above the average of people now in the Critchley-decimated airline.

No CAA Personal Plane: A recent flurry of excitement in personal aircraft circles based on an apparently unfounded belief that the Civil Aeronautics Administration intended to build "a \$600 plane" was calmed last week by an unequivocal statement from John Geisse, assistant to Administrator T. P. Wright, to the effect that such an undertaking "is the job of the aircraft industry."

Geisse pointed out: "What we do believe, and I am sure the industry shares this belief, is that the prewar plane at prewar prices cannot attain anything approaching the mass market we envisage as potentially available."

He added, in a prepared statement issued following a meeting of managers from the CAA's seven continental regions in Washington: "I would like to make it very clear that the CAA has no intention of producing 'the plane worthy of the market.' Building better planes at lower costs is the responsibility of the industry and our only part in this activity should be that of encouraging and assisting the industry in this undertaking. This can be done by improvements in regulatory procedure, by providing to the industry all of the information we can from our records and experiences which would be helpful to it, and by underwriting some of the costs of experimental development."

AAF Reorganization: Reorganization of the Army Air Forces is being prepared for use on VE day. It is understood that the four training commands and the defense commands will be consolidated into one branch of AAF, the Continental Air Force. Plans are being included for moving the air forces now in the European Theatre to the Pacific and for building up a strong hemispheric air force by intensive program of pilot training in South America.

New Liquid Cooled Engine: Another high horsepower liquid cooled engine in addition to the Allison has been under development in this country for quite some time, and was used to power one of the recently declassified Army experimental fighters. The manufacturer previously has been identified only with the light engine field.

Largest Helicopter: What is claimed as the world's largest helicopter is under construction at the new Sharon Hill, Pa., plant of P-V Engineering Forum, formerly of Philadelphia. The company states that it will be ready for flight shortly. The existence of the new model was disclosed in an announcement by Frank Piasecki, president, that P-V was moving to the new Sharon Hill facilities which will include a modern plant and flight test field. It is reported that the new helicopter will have military use.

Cutbacks Discounted: Cutbacks on VE Day will not be as great as was anticipated last summer, War Production Chairman J. A. Krug has declared. He explained that WPB has been working on reconversion plans for "six to eight" months, but there is no deadline on presenting the WPB plan to War Mobilization Director James F. Byrnes.

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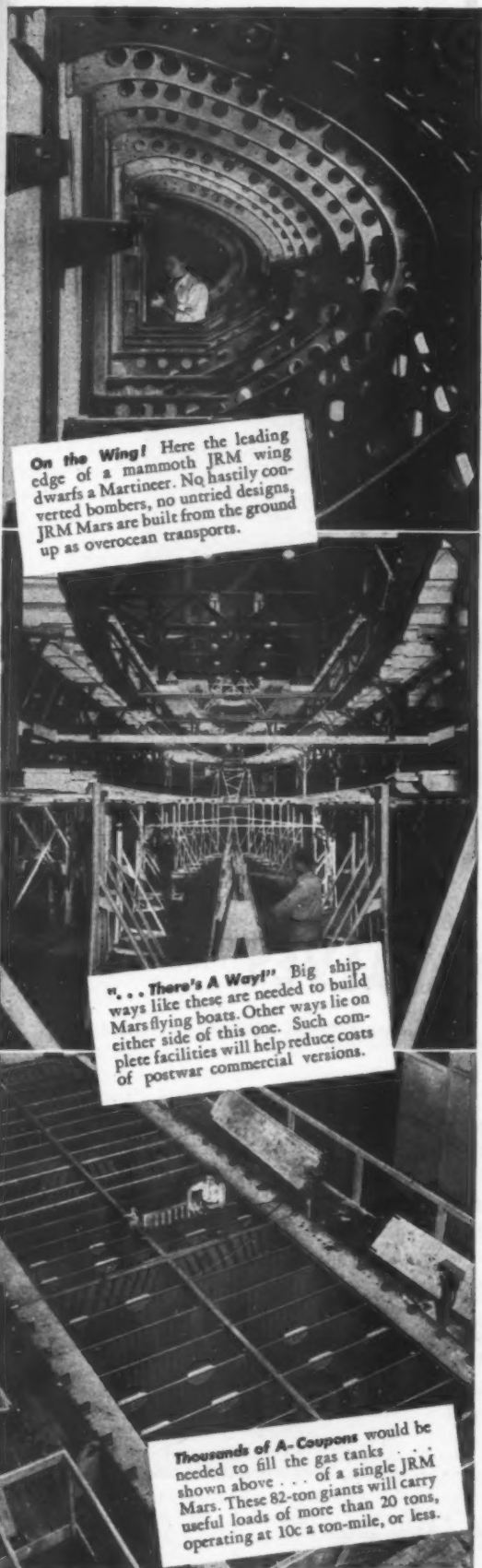
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Editorial

(Continued from page 4)

the other of the Atlantic every twenty minutes of the day and night? Is it generally known that all Atlantic traffic, North and South, Army and Navy, ferrying and transport, Canadian, U. S. and British, would pull this frequency of departure down to about every ten minutes?

Of course the traffic is military. Of course the military justification for such frequency won't last. But are we to throw away all of the training, the operating experience, the invaluable "know how"? Is there any one company, any one president, any one set of directors—regardless of whether it's a single company or a combination of all U. S. airline companies—big enough to undertake the vast potential foreign air commerce on behalf of the 130,000,000 people of the United States?

Most of the world's failures in the field of large enterprise have been due to the failure of one man or of one management group to know human limitations. The job in international air transport, as in domestic air transport, is tremendous. It will require our best technical and financial imagination and wholehearted government aid, but it will pay tremendous dividends and will keep many of our people at work when the war is over.

Our first job is domestic expansion. Our second job is foreign trade with air transportation as the essential instrumentality. The opportunities in Asia will be vast requiring much time and thought and resources. The opportunities in South America are likewise great. The large volume of traffic in the North Atlantic will require great skill in handling and developing. There are Africa, the Middle East and other parts of the world each with their specialized requirements and each demanding the best in American ingenuity. Let's get in and sell it.

Senator Brewster who has consistently stated conclusions along extremely narrow lines without having the vaguest conception of what the airplane is doing and can do for this country and the world, should note with interest that the British are soon to announce a foreign air policy. One airline? One single company? A monopoly chosen instrument? Certainly not. The British, who have never been known to be dumb and who certainly haven't been dumb in their relationships with Brewster, know that a single company will not provide their answer for world air commerce. They will have at least three or four companies. Yet the British *more than any other country in the world*, with a decidedly unified policy and world goal, should adopt a monopoly policy if that were the best method.

America will look to air transportation after the war for many things. Communities able to justify additional service should get it. The airplane is no longer a toy, no longer an experiment, no longer something to wangle around for private protective purposes. The airplane is a practical swift vehicle with such infinite potentials for world relationships and world peace that no shackles can be permitted.

The big question is not whether we are going to combine our companies to "hold our own," God forbid. The big question is whether we have enough executive talent, and enough imagination and leadership, to do the job which America will expect to have performed for it after the war. Pan American with its great number of experienced and able employees,

has a tremendous job to do without trying to gobble up the whole world. The jobs will be there, Senator Brewster, but not because of your prewar thinking. What we expect of you, and of certain executives who should be more firm in their belief in the future of American free enterprise, is leadership which will take this country into the fields of opportunity which the airplane during this war has made possible.

Let's start building instead of retarding.

Surplus Plane Disposal

THE FIXED base operator who lived on hamburgers for the many lean years before the war and pitched in with alacrity and enthusiasm when the promised days of steaks finally arrived with the pilot training programs at the start of the war, is faced today with a return to the hamburger level—if there were hamburgers.

With the closing down of pilot training programs, the local operator—now tagged with the more suitable name of aircraft service operator—had one solid hope of keeping out of the red until the postwar civilian business developed. This was through the buying, overhauling and selling of surplus airplanes. But the whimsies of Washington disposal regulations have just about by-passed the local operator to date.

The logical dealer for surplus airplanes is the local operator. That's one of his essential mainstays. But the government's policy of selling surplus planes to the highest bidder has resulted in an anachronous situation whereby the local operator has been out-bid most of the time by individuals willing to pay ridiculously high prices. The present system has put the airplanes in the hands of owners or operators at high prices that forbid overhauls and repairs.

There are two modifications of the present system which would help materially and at this writing it appeared that the Surplus War Aircraft Division of RFC was about to put them into effect. One improvement would be the replacement of the high bidding system with a set price tag on each airplane. The second would be quantity discounts.

Regulations being such as they are, surplus airplanes can't be sold only to dealers. And dealer discounts, per se, are not in order. But quantity discounts will enable dealers to make purchases beneficially, and the set price tag will avoid the unreasonably high prices which some individuals have paid.

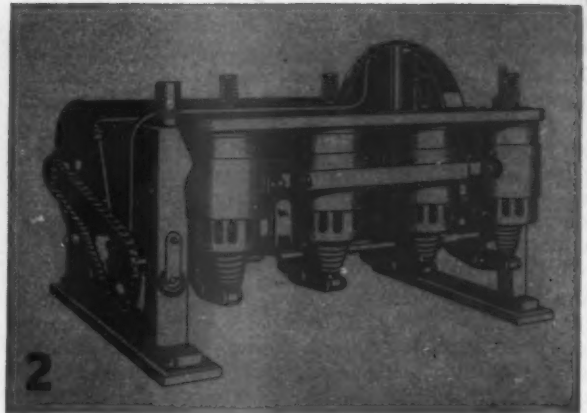
The aircraft service operator is the cornerstone of civil aviation. He's had a tough time hanging on but the war gave him a new lease on life. The brief new lease is over and now the grubbing starts until civil activities resume. The government should certainly explore every possible means of giving the local operator a break. He's the man that must be kept in business. He's the man that shouldn't be undercut by individuals who have made no economic stake and investment in the business. And it can be said in all justice that the government administrators for surplus aircraft have been working steadily toward a solution that will give the local operator the break he deserves.

WAYNE W. PARRISH.

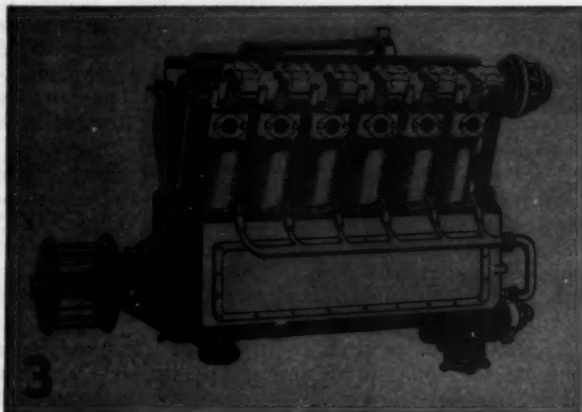
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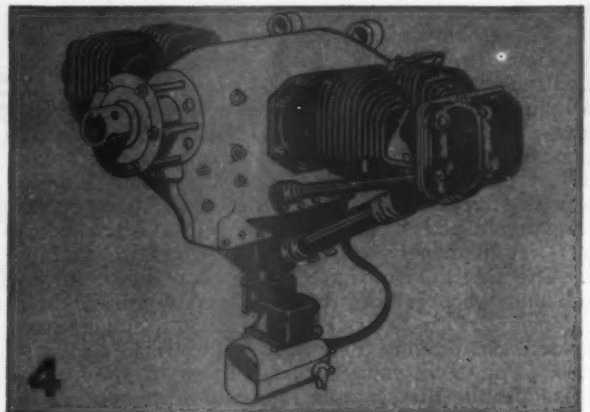
Accidents plagued the plane it powered, but this 125-pound great-granddaddy of all radial engines was a success. It developed 52.4 horsepower on crude auto gasoline. New Standard of California Aviation fuels, "tailored" to light-plane requirements, give today's small engines far greater horsepower per pound.



This four-cylinder model was mounted on its side. It made history on a sand dune, even though its first flight lasted only 12 seconds. Nowadays, with an efficient fuel like Standard Aviation Gasoline even the lightest planes can easily cruise aloft for hours at a time on swift, economical cross-country hops.



This famous engine was a World War I baby. It fought on 60-octane fuel, later flew early mail planes. For flyers in *this* war, Standard scientists helped perfect 100-octane gasoline. Their wartime research on Standard Aviation Gasolines will help give peacetime flyers safe anti-knock performance.



This one's easy to guess. Yes, it's an example of the kind of engine your post-war airplane may have. And, to make it more powerful, more dependable, to give it greater range, you'll want Standard Aviation Gasoline in its fuel tanks. Today, more than ever, Standard makes the finest of flying fuel.

STANDARD OF CALIFORNIA

THE ENGINES ARE: 1. Manly-designed engine from S. P. Langley's "Aerodrome." 2. Power plant of Wright brothers' first successful aircraft. 3. World War I Liberty engine. 4. Modern light-plane engine.





Only six hours wide - with Cyclones

Flying with Cyclone power, the Boeing C-97 transport in its six-hour record flight from Seattle to Washington proved once again: aviation's military research benefits all aviation.

The Cyclone 18's used in this new plane came from an accelerated development program for the mighty Boeing B-29 Superfortress. The result was a superb engine for high speed flight of heavy payloads of any type—bombs, cargo or passengers. The

record performances of the Lockheed Constellation and Martin Mars, likewise powered, bear this out. In fact, the Cyclone 18 is the only engine of over 2,000 horsepower used in four-engined service airplanes of any type. Its constant service development thus keeps it well in advance of new operational requirements.

WRIGHT AERONAUTICAL CORPORATION
Paterson, New Jersey, U. S. A.



In the Superfortresses, too

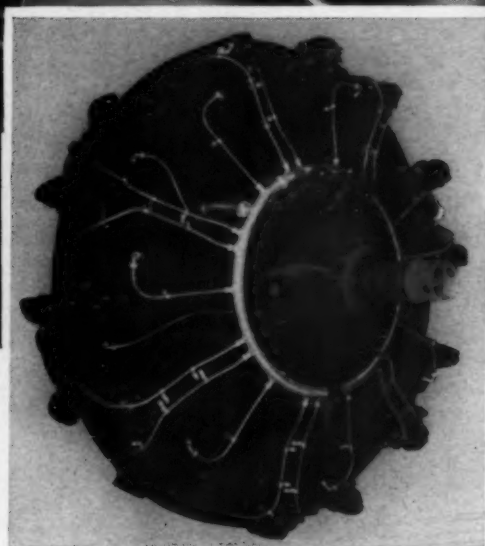
Cyclones Save 3 Ways

LESS WEIGHT—MORE PAYLOAD
LOWER FUEL CONSUMPTION
REDUCED MAINTENANCE

WRIGHT
Aircraft Engines

A Division of
CURTISS-WRIGHT CORPORATION

WRIGHT POWERS THE TONNAGE OF THE AIR



1. Inner flexible conduit affords maximum physical protection to wiring.
2. Braided wire covering, sometimes in multiple layers, improves the electrical shielding and provides increased ruggedness.
3. Main conduit manifold is bent to shape from seamless tubing.

Electrically Sealed Circuits

WITH BREEZE RADIO IGNITION SHIELDING

The Breeze Radio Ignition Shielding which equips the modern aircraft engine is the product of extensive laboratory test and research.

Effective shielding calls for a metal case of high conductivity around possible sources of radio interference, designed to lead off high frequency impulses to the ground and prevent their radiation. Each installation must be custom engineered to meet the needs of the problems involved.

Breeze Shielding is designed for ruggedness, resistance to vibration, and maximum isolation of high frequency interference. Each wire of the braided cover must be positively soldered at each connection, inner conduit must be tight to avoid electrical leakage, and fittings must be precision-machined for close fit and uniform pressure of contact faces.

New shielding problems presented by the rapid advance in the science of radio communication and television are constantly being solved by Breeze engineering. A background of many years experience in shielding automotive, aircraft, marine and commercial engines has made Breeze America's headquarters for Radio Ignition Shielding.

Breeze 
CORPORATIONS, INC.

Newark, New Jersey

Black Widow embodies a step forward in designing a better WORKING WING



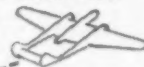
The wing is the *lift* element of an airplane — nearly all else is *drag*. By increasing the versatility of the wing — giving the wing more jobs to do — other non-lifting elements can be reduced in size or cut out entirely. Result? More efficient aircraft.

The Northrop-developed retractable-aileron is a step in this direction. With retractable-aileron and the full-span flaps thus made practicable, the hefty, speedy Black Widow airplane, for example, becomes as easy to handle as a plane half its size . . . able to hover in the air, turn like a fly and slow down to land on exceedingly small air strips.

Count on this Northrop advancement to help future wings do the work of peace. Whatever shape aircraft may take — whether with fuselage or with payload carried in the wing itself — the principle of retractable-aileron and full-span wing flaps will be usable. They'll be part and parcel of better working wings that will bring greater safety, maneuverability, more economical operation. Northrop Aircraft, Inc., Northrop Field, Hawthorne, California. Member Aircraft War Production Council, Inc.

RETRACTABLE
AILERONS
make possible
FULL SPAN
FLAPS

which permit heavy,
fast planes to take off
QUICKER



TURN TIGHTER



LAND SLOWER



NORTHROP

Creators of the *Flying Wing* and the
Black Widow P-61 Night Fighter



Rail vs. Air Mail Pay

To the Editor:

Teaneck, N. J.

Believe me I have seldom written to the editor, but have been wondering "What was wrong" in your editorial captioned "Something Wrong" in *American Aviation* of Feb. 1. The editorial said in part—

"The public pays three cents for a first class postage stamp. The railroad carry this first class mail at about 40 miles an hour for 28 cents a ton mile. The public pays 8 cents for an air mail stamp. The airlines carry this mail at about 60 miles an hour for 60 cents a ton mile. This would seem fair enough, etc."

Obviously something was wrong, and like many others, believing rather firmly in the efficacy of competitive rates, it was natural to investigate the editorial.

It seemed inconceivable that the Government would pay the railroads anything like 28 cents a ton mile for merely "carrying" the mail, first class or otherwise, in the sense that the airlines carry it, and upon referring to a number of Government statistical reports find that the Post Office Department, according to best estimates, has been paying the railroads from 6 to 7 cents a ton mile rather consistently through the years for "carrying the mail". Apparently they "carry" first class mail at a relatively cheaper rate than the other classes, because the railroads are paid on a "space basis" and first class mail is of greater density.

The railroads carry the mail under mandate of law in specified types and units of car or otherwise as directed by the Postmaster General, at space rates prescribed by the Interstate Commerce Commission. The method of paying the railroads was changed from "weight" to "space basis" in 1916, and in the absence of mail weighings no one apparently knows the number of pounds of mail being carried by the railroads. Without attempting to detail all of the space units and rates, it should suffice to say that the major portion of the mail is carried in 60 foot cars having payload capacities which vary from approximately 30,000 pounds to over 100,000 pounds. The Post Office Department has specified 60,000 pounds as the minimum capacity it will accept as satisfactory and if mail loading is stopped in a car having less than 60,000 pounds carrying capacity before the car has been filled to cubic capacity, the railroads will receive only a pro-rata portion of the authorized mail rate. Rates being received by practically all of the railroads are 40.5 cents per mile for a 60-foot storage mail car, and 39 cents per mile for a 60-foot Railway Post Office. Therefore, when mail of sufficient density is available the Post Office pays very low ton mile rates.

I have therefore been wondering whether the 28 cents ton mile carrying figure used in the editorial was not built up by charging against railroad transportation the car mile rentals of Railway Post Offices, and if so whether it was quite proper to use that figure without qualification. These cars are literally "Traveling Post Offices," being equipped by the railroads, as specified by the Post Office Department, with facilities for the distribution of mail enroute by Railway Postal Clerks having approximately 80 percent of the car space occupied by distributing racks, letter cases, tables, overhead boxes etc., leaving only about 20 percent of the car space available for "carrying" the mail. The Civil Aeronautics Board and the Post Office Department know this. It is thought the enclosed official R.P.O. car specification will show what I mean. It is understood that as many as 15 railway postal clerks at a time distribute mail in cars of this type.

The Post Office Department seems to think well of this method of handling the mail and it is understood a considerable quantity of

New Booklets and Films

A simplified time chart of the world compiled by Lt. Comdr. Charles M. Thomas, U.S.C. & G.S., has been published in pocket form by Cornell Maritime Press, New York. It consists of a map of the world marked off in 15-degree longitudes to indicate the various time zones. Diagonal noon and midnight lines show how these periods progress

around the world. The chart not only shows at a glance what time it is anywhere else in the world when it is a certain time at any given place, but can be used in connection with a Greenwich chronometer to determine longitude.

"Wartime Development of the Aircraft Industry" has been issued by the Department of Labor as Bulletin No. 800. The 24-page report covers employment trends, employment distribution, labor turnover, absenteeism of workers, hours and earnings and production trends as well as a general description of the industry. Copies are available at 10 cents each from the Superintendent of Documents, U. S. Government Printing Office, Washington 25.

Switlik Parachute Co., Trenton 7, N. J., has issued a new manual. The 52-page illustrated booklet describes various types of parachutes, and gives instructions for inspection, maintenance and packing.

Lear, Inc., Piqua, Ohio, has completed a new booklet entitled "Learn Know How" which gives a complete story of Lear equipment in its present and potential uses.

A booklet, "Airport Planning," has been prepared by Giffels & Vallet, Inc., Detroit, which covers many of the developments that may be expected in postwar aviation. It contains many charts and graphs which deal with the experience in the growth of air transportation as to carriage of passengers, mail and express with comparisons with other transportation services.

Fairchild Camera & Instrument Corp., New York, has issued an illustrated booklet entitled "Focusing on Victory—The Story of Aerial Photography at War." It contains a series of striking aerial photographs in addition to descriptions of Fairchild aerial cameras and possible uses for them in time of peace.

A profusely illustrated, hard bound brochure describing the Curtiss CW-20E postwar commercial Commando has been issued by Curtiss-Wright Corp., 30 Rockefeller Plaza, New York 20. In addition to describing the proposed airliner version, it contains performance and cost data.

Cleveland Pneumatic Tool Co. hails its Golden Anniversary in a booklet "Pioneers for 50 Years", in which it tells of the firm's rise as a manufacturer of pneumatic tools, rock drills, aircraft landing gear, and motor vehicle shock-absorbers.

Pan American Airways has signed a contract with the National Broadcasting Co. for a series of television programs over Station WNBC, New York. The program takes the form of a 15-minute show, "Wings of Democracy," beginning Monday, March 19. The programs will feature the physical, educational and cultural attractions of countries and colonies throughout the world in their relation to world air travel and trade.

Aeroquip Corporation's new sound and color film, "Saving Hours for Victory" is now available for showings, the company announces. This 16 mm. talking film provides actual aircraft and field demonstrations of the quick-detachable features and replacement operations covering Aeroquip Self Sealing Couplings and flexible Hose Lines and Fittings which are standard equipment on a large part of American aircraft. Prints of the film are available to all military and naval training and maintenance groups, aircraft manufacturers and service organizations, air lines and technical schools. Running time, 10 minutes. Requests will be handled by Clarke H. Field, Aeroquip Corporation, Jackson, Michigan.

air mail is also being handled in these cars at a cost to the Post Office Department of less than one-fifth of a cent per piece for the rail transportation. According to the 1942 P. O. D. Cost Ascertainment Report, the last one issued, the plane carrying cost of air mail was somewhat higher, being approximately five cents per piece. These reports also indicate that the average ton mile rate paid to the air lines for handling mail amounted to \$2.05 in 1941 and \$1.77 in 1942, however, these figures are at substantial variance with CAB statistics which indicate ton mile rates of \$1.86 in 1941, \$1.50 in 1942, 84 cents in 1943, 67 cents in 1944, and about 50 cents in 1945, if the proposed 32 cent rate is applied.

It is well recognized that for many years first-class is the only class of mail that has been paying its way. All other classes, as well as miscellaneous services, have been subsidized and the Department has depended upon the profit earned on first class mail, averaging about 150 million dollars annually since the advent of the three-cent postage, to defray the deficit on the other classes. It was only in 1943, in war time, that air mail began paying its own way. For about 25 years prior thereto the mail rates to the air lines not only subsidized the air mail but apparently the passenger rates as well. It does not seem reasonable to expect this to continue after the war, and also possibly encompass air freight rates. The original objective of the various subsidies was to foster an infant industry that has now become a giant with a very important place in world economy, but like all great industries, it will in the long run have to be organized to pay its own way and meet competition on even terms. This is apparently what CAB has in mind in the recent "Show Cause Orders" to the Big Four.

Post-war adjustments are necessary. It is not likely that the eight-cent domestic air mail postage rate will be retained, at least we hope that the extra two cents per ounce, which is essentially a war tax, will pass into oblivion with many of the other war taxes. Planes are our fastest mode of transportation and under the strain of war emotion no one has hesitated to pay the six or eight cent air mail postage, in the hope of facilitating communication with loved ones away from home, and the volume of air mail has skyrocketed. It has been estimated, however, that at least 75 percent of air mail poundage is war connected. If this is true, when it falls off after the war, it would appear that approximate prewar poundage will be left and probably require other rate adjustments by CAB to conform to the Civil Aeronautics Act.

In the belief that it is wise never to underestimate the competition, or to treat their rates lightly, I thought you might wish to clear up that 28-cent ton mile figure quoted in your editorial.

W. J. TRELOAR.

Editor's Note: It is true that the Government pays the railroads about six or seven cents a ton mile for all services performed. But the point in question is only first class mail, or letter mail. The airlines transport only first class mail. The question is, what do the railroads get for transporting first class mail. In 1942 first class mail carried (exclusive of air and non-local mail) amounted to 148,432,564.179 pound miles. The railroads were paid \$20,782,504.40 for carrying this mail. The answer is approximately 28 cents a ton mile.

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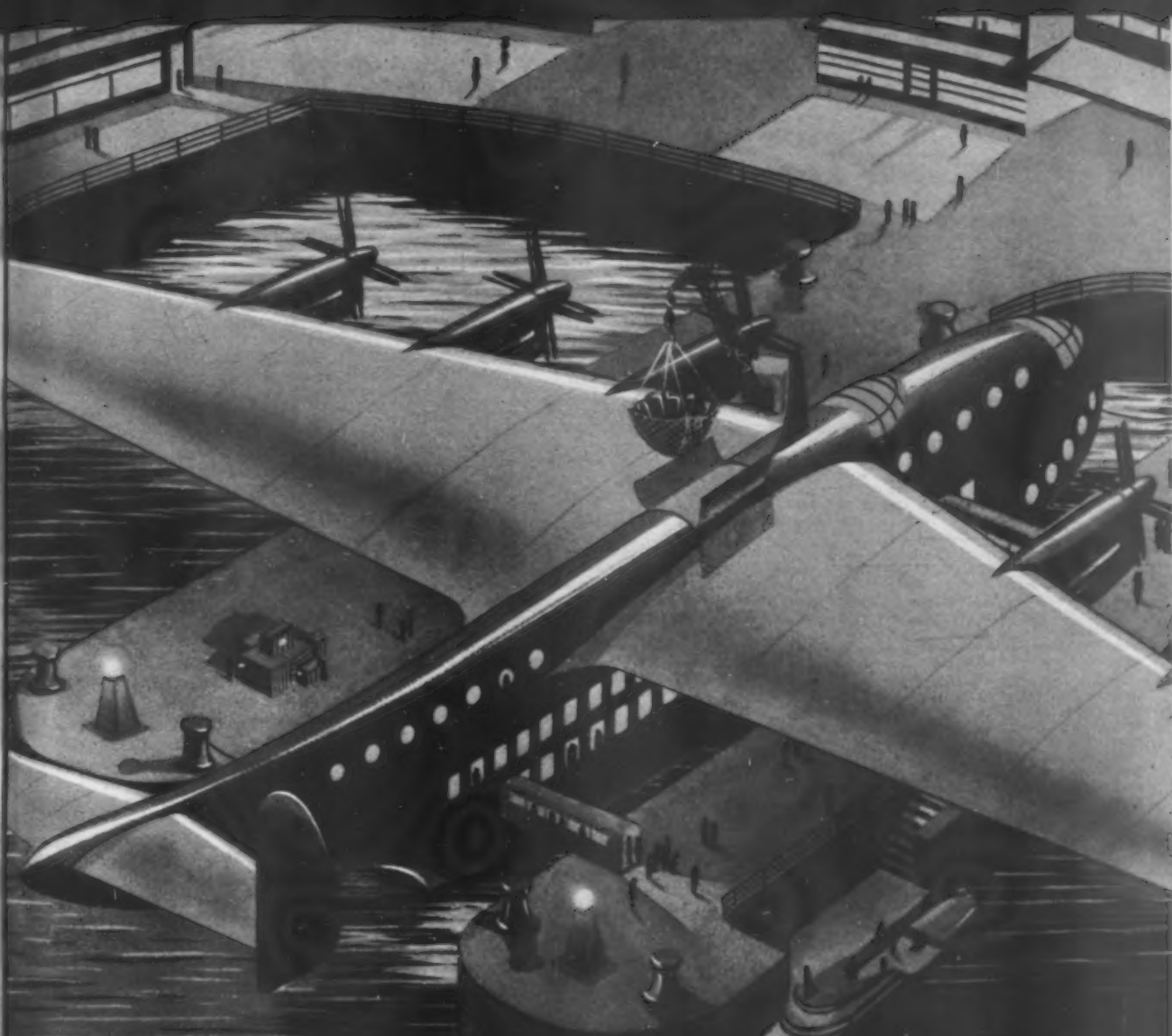
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Books

AIR TRANSPORT AND CIVIL AVIATION 1944-45. Todd Publishing Co. Ltd. British Distributor. George G. Harrap & Co., 182 High Holborn, London W.C. 1. 312 pp.

The new issue of this British aviation reference book has just been received on this side. The first half is devoted to articles and reprints of speeches on various phases of aviation, especially including international, airports, air transport and technical articles. In addition to a number of well known British authorities, several Americans contribute. Amongst these are W. A. M. Burden, Assistant Secretary of Commerce, Charles I. Stanton, Deputy CAA Administrator, and C. B. F. Macauley, who discusses helicopters. Such others as the able Hudson Fysh, managing director of Quantas Empire Airways in Australia, and D. B. Wallace of Canadian Pacific Airlines, also have articles.

There is a considerable amount of world-wide directory information on airlines of the world, government officials, aviation committees and organizations, airports and other data. Some of the data are rather out of date and hence of not too much usefulness, but there is considerable that is up to date and valuable for reference purposes.

In one sense the book is a hodge podge because the contents range from articles on regulation and policy to purely technical articles on aluminum alloys and butane for aircraft, and from a list of airports in various countries to specifications for aircraft. But in the great variety of contents is a substantial amount of good material for which there is no other current source.

W. W. P.

AIRCRAFT ARMAMENT. By Louis Bruchias. 224 pp. Aerosphere, Inc., New York.

The history and development of aircraft armament are covered in detail in this profusely illustrated book by the associate editor of *Aerosphere*. Separate chapters are devoted to bombs, machine guns, cannon, turrets, ammunition, foreign weapons, armor protection, anti-aircraft weapons and self-propelled ammunition and bombs, with all types up to the most recent being described and the reasons for their use explained. The book concludes with a chapter on future aircraft weapons and air warfare, in which such proposals as duplex projectiles, jet propelled aircraft and the effect they will have on present tactics, radio controlled robot planes, ultra high speed guns, airborne tanks and tank gliders with detachable wings are fully discussed. It is a most interesting book for the student of aerial warfare.

S. C.

PRODUCTION ENGINEERING IN THE AIRCRAFT INDUSTRY. By A. B. Berghell. 307 pp. \$3. McGraw-Hill Book Co., New York.

The author, an industrial engineer at Northrop Aircraft Inc., explains the application of various principles of production engineering as applied to aircraft, and illustrates them with specific cases, questions and answers. Subjects include: estimating new contract costs, budgeting and scheduling direct labor hours, controlling work in progress through the use of time standards work simplification, material saving and statistical and graphic reports. A wealth of technical information is provided in a 200-page appendix.

DICTIONARY OF ENGINEERING AND MACHINE SHOP TERMS. By A. H. Sandy. 153 pp. \$2.75. Chemical Publishing Co., Brooklyn, N. Y.

This book contains definitions of many important shop terms, and while not compiled particularly for aircraft plants, should prove useful to engineers and particularly to machine shop foremen and supervisors.

WINGSPREAD. Aviation in New Zealand. By Leo White. The Unity Press Ltd., Auckland, N. Z.

Although this book appeared some time ago, it is worthy of mention to those interested in international aviation as the most authentic book on New Zealand's aviation. It is an intimate and personalized history of the air pioneers of that country by the one man most qualified to write it. Not only has Leo White participated in aviation since 'way back but he owns the finest and most complete collection of aviation photographs in the country. Until recently he has been a Flying Officer in the Royal New Zealand Air Force, and is editor of the new aviation monthly, *White's Aviation*, scheduled to make its debut March 1.

It is interesting reading because there are so many references to Americans and others who played itinerant parts in early aviation in New Zealand. The record flights across the Tasman Sea and the Pacific also hold interest for those in this country. The illustrations are very good. Of special interest to this reviewer was the story of Capt. Jack Burgess, one of New Zealand's top transport pilots, who has been flying the Atlantic for British Overseas Airways. Although this book is essentially of interest to New Zealand, aviation book collectors in this country might well add this one to their collection.

W. W. P.

ISLAND IN THE SKY. By Ernest K. Gann. 181 pp. \$2.50. The Viking Press, New York.

Here is a romantic saga of men of the air which is comparable in many ways to the sea epics of the clipper ship days. Its characters are airline pilots flying the North Atlantic for the Air Transport Command, but it is not a war book but rather a story of man's battle against the elements.

Based on a true incident from the annals of the ATC, the story starts when one of the planes is forced to land in the unknown lake country of Northern Canada, and from this point on concerns itself with the struggles of the pilot and crew to preserve life in the face of unbearable cold, and the efforts of their comrades to find and rescue them against odds that even they suspect to be hopeless.

It is a story of men of the air and the world apart in which they live, and it does what they themselves find difficult to do—makes clear the magic of their island in the sky to the groundlings to whom flight is still a mystery. The author is a flyer and like St. Exupery in "Night Flight" captures in words the almost indescribable emotions and tensions of the air world.

S. C.

Obituary

Frederic A. Borsodi

Maj. Frederic A. Borsodi, 28, chief of the fighter branch, flight section, Air Technical Service Command, was killed in England testing combat planes. Before entering service he was a test pilot for Pratt & Whitney Division of United Aircraft Corp.

Henry M. McFadgen

Henry M. McFadgen, vice president of Jacobs Aircraft Engine Co., died Feb. 8 at Miami Beach, where he had been recuperating from a heart ailment.

Marcel Doret

Marcel Doret, 48, French ace of World War I, and afterward chief test pilot of Dewoitine Aircraft Co., died in Abbeville Feb. 5. He founded France's largest flying school, the Aero Club De La Somme.

Twenty-five Years Ago

Maj. R. W. Schroeder, flying a 400 hp. Liberty motored Packard Lepere biplane equipped with Moss turbo-compressor, established a world's altitude record of 33,000 ft. at McCook Field, Dayton, Ohio. The record was calibrated by the U. S. Bureau of Standards. The F. A. I. method indicated 33,114 ft. (Feb. 26, 1920)

Radio messages from planes, during maneuvers of the 37th Infantry at Ft. Mackintosh, were received over a distance of 175 miles. (March 3, 1920)

A Handley Page plane, piloted by Capt. Clarke, arrived at Bombay at 9 p.m., having flown from Calcutta, a distance of 1200 miles, in 17 hours. Accompanying Capt. Clarke were two mechanics, three passengers, three press representatives and a servant. (March 5, 1920)

Maj. Albert D. Smith flew a reconstructed Boeing-DeHaviland plane from Camp Lewis, Wash., to San Diego, Cal., a distance of 1400 miles. His course lay almost entirely over mountains 6000 to 7000 feet high. (March 6, 1920)

The second annual aeronautical exposition of the Manufacturers' Aircraft Association was held at the 71st Regiment Armory in New York City. (March 6-13, 1920)

Lt. H. R. Harris, with Lt. A. L. Smith, Lt. E. B. Koger of the Navy, Clarence B. Combs, flew a 12-passenger Martin Army transport plane from McCook Field, Dayton, Ohio, to Bolling Field, Washington. Distance, 385 miles; time, three hours, 63 minutes. (March 8, 1920)

The first seaplane flight of the Belgian mission established aerial transport in Congo, between Kinshasa and Bolobo. The 200 miles were flown in two hours, 39 minutes. (March 8, 1920)

Fifteen Years Ago

The Mid-West Legislative Conference held a meeting in Milwaukee under the auspices of the Milwaukee Chapter of N. A. A. (Feb. 24, 1930)

An altitude record for commercial planes, of 30,453 ft., was established at Wilmington, Del. by George W. Haldeman in a Bellanca Pacemaker, Wright Whirlwind motored. (Feb. 28, 1930)

Capt. Boris Sergievsky established a seaplane altitude record, with payload of 2000 kilograms, of 19,065 ft. at North Beach, N. Y., flying a Sikorsky S-38, two Pratt & Whitney Hornets. (March 4, 1930)

Elinor Smith established a woman's altitude record of 27,418 ft. at Valley Stream, L. I., in a Bellanca Pacemaker, Wright Whirlwind motored. (March 10, 1930)



OVER ROOF-TOPS OR MASTHEADS!

Able to fly high or low, fast or slow—even reverse! —the helicopter of tomorrow will be ideally suited for many post-war air services. Its ability to hover in the air, back up, move sideways, descend or rise vertically and land in a small area, will add many new applications to the already great facilities of conventional air transport. Deck operation, from sea-going vessels, is one of these.

Kellett has been logging hours of helicopter flight . . . valuable experience which will be available for a variety of future civilian uses. Right now

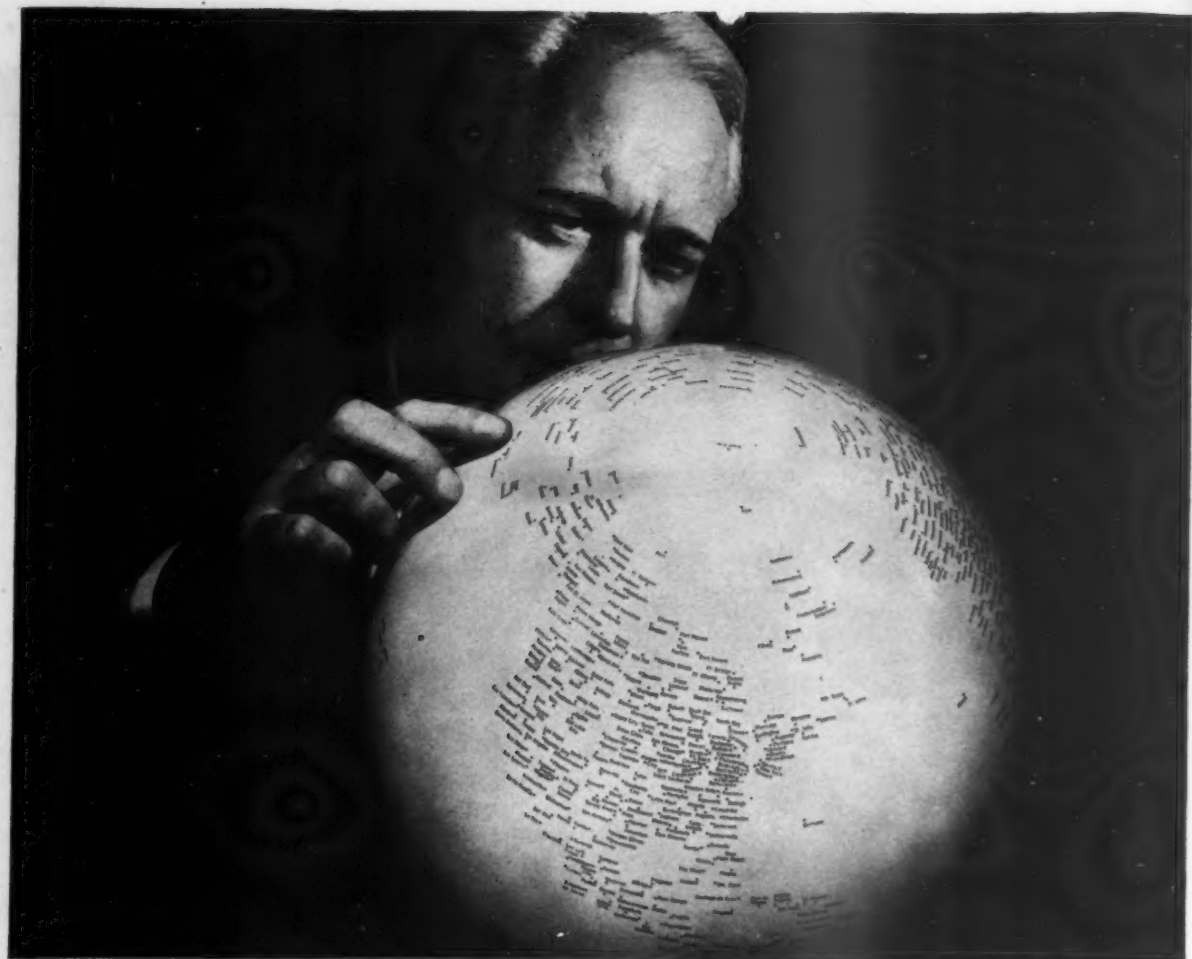
all Kellett production is for our military forces. Later on, Kellett helicopter developments may be expected to expedite "flying without wings" over roof-tops and mastheads, over forests, plains and farmlands!

INTERESTING FREE BOOKLET

"Answering Some Helicopter Questions" brings you many interesting facts about the modern helicopter and its present capabilities. Write to Kellett Aircraft Corp., Dept. A, Upper Darby (Phila.), Pennsylvania.

KELLETT

OLDEST ROTARY WING AIRCRAFT MANUFACTURING COMPANY



Air Globe, marketed by Rand McNally & Company

All Mother Earth's Children Live on the Same Street

NOTHING on earth matters except in terms of *people*; therefore, only people are represented upon this globe. Because we cannot name all of the earth's inhabitants individually, we show synonyms, the names of places *where* they live.

The important thing is that all of these places are upon the *one* highway of air . . . an endless, omnipresent thoroughfare. This elementary fact makes possible the greatest changes in the history of the human race.

Air transportation brings all of Mother Earth's children closely *together*. There are *landlocked* nations,

but there are no *airlocked* nations, cities or individuals.

The better to visualize what this *means*, American Airlines introduces Air Globe, a new kind of globe that never can become obsolete. Mountains, oceans, arctics, deserts, jungles and other surface barriers, which long have kept people *apart*, have disappeared because air is available to everyone and permits swift transportation *above* the earth, everywhere. The innumerable boundary and dividing lines found upon maps of the earth's surface also are omitted, because air, itself, is indivisible, and plays no favorites.

Global air transportation presents new *national* opportunities and problems. Also new *personal* ones—as personal as the air we breathe.

To meet our country's needs, American Airlines expanded its service into Canada and Mexico; now we are ready to meet our obligation also to provide American's standard of air transportation *overseas*.

The operation of our regular Flagship schedules is the specific responsibility of American Airlines. Our generic duty is to interpret the importance of air transportation and apply it to our nation's prosperity and *security*.

AMERICAN AIRLINES *Inc.*

THE NATIONAL AND INTERNATIONAL ROUTE OF THE FLAGSHIPS

New Sales Plan Devised on Surplus Trainers

Price Tag on Each Plane to Replace Bids; FEA to Continue Handling Disposal Abroad

THE CLOSED BID method of disposing of surplus trainers and other light planes probably will be abandoned in the near future in favor of the placing of a set price tag on each plane. Selling the planes to the highest bidder has worked real hardship on the aircraft service operators, Defense Plant Corporation officials state, but it performed an invaluable service to the Government in establishing the market worth of these planes, they declare.

The surplus War Aircraft Division of Defense Plant Corp. is working out a range of prices to cover all Fairchild PT-19s. Within this range, a set price will be assigned to each surplus PT-19 depending on its age and condition. Officials hope to put the plan into effect "well before summer." They said this new procedure, if effective, could be adapted to every light plane model which is declared surplus in large quantities.

Of the nearly 4000 PT-19s which have been declared surplus about 450 have been sold by the closed bid method, bringing prices up to \$3700. Although DPC has not definitely decided on any top price yet, it indicates it will be substantially below this figure.

Plans which have been proposed permitting aircraft service operators to buy planes in lots, repair them and resell them at a 10 to 15 percent profit would not be administratively possible, officials believe. They pointed out that it would require an examination and evaluation of the repair made on each plane and added that the resale ceiling prices are the responsibility of OPA in any case.

Louis R. Inwood, special aircraft assistant to James A. Garfield, chief of the War Surplus Aircraft Division, who aided with the new plan, has returned to Transcontinental and Western Air in Kansas City.

Quite a Difference

A very substantial difference in air mail compensation apparently exists between U. S. and Canadian airlines. In a recent editorial *The Financial Post* of Toronto recommends a review of the method of payment to Trans-Canada Air Lines because, it says, the air mail pay amounts to about \$2.16 a ton mile. Four U. S. major airlines are currently being paid 60 cents a ton mile and the CAB has asked them to show cause why this amount should not be lowered to 32 cents a ton mile.

THE AIRCRAFT Division of the Foreign Economic Administration, working in close co-ordination with the State Department and other Government agencies, will continue to exercise the principal role in surplus plane disposals to foreign countries.

A new regulation, formalizing the continuance of the existing set-up, was adopted by the new Surplus Property Board last fortnight. This quieted all speculation as to FEA's future responsibilities with reference to surplus aircraft disposal. Doubt had been raised by a statement of one of the new Board members at a press conference in which he stated that all foreign surpluses would be handled by a joint Army-Navy commission.

Under the present set-up, FEA and the State Department make the recommendations on allocation of planes to foreign applicants while the Reconstruction Finance Corporation and the Civil Aeronautics Board make the recommendations affecting U. S. airlines and domestic applicants. Representatives of these four agencies have worked in close harmony. In the allocation of a total of 131 transport planes, it is understood that the decisions involved have had the backing of a unanimous vote in each case. Obviously, U. S. foreign policy is playing a considerable part in disposition of surpluses to foreign countries, based on this country's fight for reciprocal landing and other rights in the field of international aviation.

Allies have been supplied several thousand planes under the lend-lease agreement. When any of these planes, due to wear or obsolescence, are declared excess by any foreign power, the Munitions Assignment Board is notified. If MAB discovers that these planes cannot be used in any theater of the war to fill requests for equipment which it may have on record, then they are declared surplus to FEA. If they are military or combat type planes which either for security or utility reasons, have no market value, FEA turns them back to the military for salvage of such parts as can be used in the repair of other planes.

Thus far, transport type planes have been declared surplus only while they were in this country. However FEA is set up, through offices in strategic places throughout the world, to take custody of them at whatever location they are when they are declared surplus. Hence, whenever foreign applicants desire planes, attempts will be made to furnish them with surplus equipment from points located nearest to the source of the request.

The Aircraft Division of FEA is now engaged in compiling a list of exporters who are interested in plane sales.

Leasure Leaves CAB, Brown Succeeds Him

C. Edward Leasure, chief examiner of the Office of Trial Examiners of the Civil Aeronautics Board, will leave the board



Brown

shortly to go into private law practice in Washington. Leasure will share offices with Robert Thach, airline attorney for many years, but will handle his own independent practice.

Leasure has been in government service since 1922 with the exception of one year. He joined the I. C. C. initially as an evaluation engineer and remained with this agency until the CAA was created in 1938. He was first an examiner, subsequently chief of the proceedings division, and since July of 1943 has held his present position. He is one of the best known government men handling aviation matters. He will be succeeded by Francis W. Brown, who has been assistant chief examiner. Prior to joining the CAB in 1939, Brown was an examiner for the I. C. C.

Liberators Added On Australia-India Run Begun by 'Cats'

The longest non-stop air service in the world is the 3500-mile hop from Australia to Ceylon, India, the only air connection between the China-Burma-India and the Southwest Pacific theaters. The Indian Ocean crossing is known as the "Kangaroo" service.

Qantas Empire Airways opened the service in 1943 with Catalina flying boats. Shortest air time marked up with the Cats is 22 hours and 46 minutes. Longest crossing was 31 hours and 51 minutes—just short of one day plus eight hours.

Qantas has now added four-engined Liberators to the service with four weekly crossings. Each Lib carries 15 passengers and crew of five, a substantial increase in payload over the Cats. The distance is reduced to 3100 miles with the additional of a refueling stop in the northwest part of Australia, and the average crossing, made at night, is about 17 hours. The Australian terminal is Perth and the Ceylon terminal is an airport a few miles from Colombo.

The U. S. Air Transport Command also flies the long over-ocean route with Douglas C-54's but no regular frequency of schedule is maintained.

Number of U. S. Airline Routes Into Canada Increased to 15

Dominion Granted Eight Into States By New Agreement

By WAYNE W. PARRISH

A NEW civil air transport agreement between the United States and Canada became effective Feb. 17 providing for substantial increases in air routes between the two countries. The general agreement had been reached between the two governments at a meeting in New York Jan. 25.

The number of Canadian airline routes into the U. S. was increased from one to eight.

The number of U. S. airline routes into Canada was increased from eight to 15.

The agreement followed the general lines of the standard form of bilateral agreement adopted at the Chicago aviation conference and makes specific provision for the reciprocal grant of the Two Freedoms—the right of transit and non-traffic stop—which will permit American air services to operate through Canada on routes to Europe and the Orient, and will permit Canadian air services to cross the U. S. en route to Latin America or to Australia, both without privileges of stopping to discharge or take on passengers.

U. S. Routes Designated

The following routes are designated as U. S. routes to be operated by authorized U. S. carriers:

Boston-Moncton
Boston-Montreal
New York or Boston-Quebec

New York-Montreal and Ottawa (Provided that Montreal and Ottawa shall not be served on the same flight)

Washington-Montreal and Ottawa (Provided that Montreal and Ottawa shall not be served on the same flight, and that the last point touched in the U. S., if it be other than Washington, shall lie east of the 77th meridian)

Buffalo-Toronto
 Fargo-Winnipeg
 Great Falls-Lethbridge
 Seattle-Vancouver
 Seattle-Whitehorse, Y. T.
 Fairbanks-Whitehorse, Y. T.

The service on the route between Buffalo and Toronto may, at the election of the U. S. Government, be rendered by two airlines. On the other routes service by a single airline only will be authorized.

In addition to the routes listed above, airlines of U. S. registry will be authorized to stop in Windsor on any route on which they are now or in the future may be authorized by the U. S. to serve Detroit.

Airlines designated by Canada may operate on the following routes, with the right to take on and put down passengers, mail and cargo at the U. S. terminals specified:

Halifax-Boston
 Toronto-New York
 Toronto-Cleveland
 Toronto-Chicago (No stop will be made

on this route at any Canadian point within 40 miles of Detroit.)

Port Arthur-Duluth
 Victoria-Seattle
 Whitehorse-Fairbanks

A single airline will be authorized for each of the foregoing routes. With respect to the routes between Toronto and Cleveland and Toronto and Chicago no through services will be operated from either point in the U. S. to points lying beyond the territorial limits of Canada. This means that Canada cannot operate a through direct Chicago-London or Cleveland-London service.

In addition, Canadian airlines will be authorized to stop in Detroit on any route on which they are now or in the future may be authorized by the Canadian Government to serve Windsor.

The agreement provides for a net increase of seven air routes for Canada, since the New York-Toronto route was the only Canadian operation into the U. S. since suspension of the Vancouver-Seattle service. The Toronto-Chicago route is an especially prosperous run.

It is noteworthy that not one of the routes asked for by Canada is duplicated by a U. S. service.

Among the U. S. routes, quite a few are already in operation. Northeast Airlines operates from Boston to Moncton and Boston to Montreal. Colonial operates from New York to Montreal. American Airlines operates from Buffalo to Toronto and stops at Windsor. Northwest Airlines operates between Fargo and Winnipeg. Western Air Lines operates to Lethbridge, United Air Lines to Vancouver, and Pan American Airways from Seattle to Whitehorse.

Canada Good Bargainer

Thus what the U. S. obtains, if the Civil Aeronautics Board elects to choose the operators, is a new route from either Boston or New York to Quebec (not potentially great for traffic), a new route from New York to Ottawa (likewise not a great potential), two routes from Washington to Ottawa and Montreal, (holding some promise of development), another route into Toronto from Buffalo (not much potential), and carte blanche rights to stop at Windsor on all Detroit flights.

Although only one carrier is specified between Seattle and Whitehorse, Yukon Territory, it should be noted that the U. S. may authorize any number of carriers between the U. S. and Alaska so long as the carriers do not stop to discharge or pick up traffic en route in Canada. The planes can stop for refueling or other non-traffic purposes, however.

By and large Canada did well in its bargaining. Its exclusive non-stop New York-Toronto route has been supplemented with a non-stop Toronto-Chicago service, thus connecting its big business center with the two largest U. S. cities without direct U. S. competition. Although a direct through service to London is prohibited, Canada will be able to offer a short route to London from Chicago with a change of planes somewhere in eastern Canada, probably Montreal.

Canada's Air Plans

In announcing the U. S.-Canadian civil air agreement in Canada, C. D. Howe, Minister of Reconstruction, said Canada has an interest in obtaining three international air services. One is a route across the North Atlantic. A second is a route serving the West Indies and Latin America, (necessitating a transit crossing of the U. S. without stops for discharging and taking on of passengers), and the third is Canadian participation in a Pacific route, presumably with New Zealand and Australia as partners.

Navigator's Companion To Automatic Pilot Aids B-29 Attacks on Japan

A navigator's companion to the automatic pilot is now revealed to have been playing a leading role in B-29 raids on Japan. Developed in the Eclipse-Pioneer Division of Bendix Aviation Corp., the new instrument is known as an automatic position indicator or API, and for the first time in aviation or marine history gives continuous readings of latitude and longitude regardless of speed, drift.

Brain of the API is a self-contained device about the size of a quart milk bottle which is mounted on the instrument panel and automatically performs all of the computing, calculating and indicating functions. It instantaneously makes calculations which ordinarily would require a navigator to work for hours with charts, basic navigational reference books, star-sighting sextants, a chronometer and parallel rules and dividers to calculate the position of his airplane in flight.

Two indicating counters, set in an instrument panel compass dial, show degrees of latitude and longitude and give the aerial navigator an exact and continuous reading of his position. This same dial also gives the navigator a continuous record of nautical air miles flown and indicates the correct compass heading of the plane. From these readings plus a check of the driftmeter the navigator can pinpoint his position immediately on the map.

The API was placed in mass production months ago at the Eclipse-Pioneer division, and sub-contractors have also been trained to produce the new computer.



Brain of the API—This unit, which is hardly larger than a milk bottle, is the computing unit of the air position indicator developed by Eclipse-Pioneer division, Bendix Aviation Corp. to give continuous readings of latitude and longitude.

Monopoly Issue Virtually Dead; Atlantic Decision May Come Soon

ALTHOUGH Pan American Airways continued to wage a stiff fight on behalf of the single community airline project for U. S. international air commerce, the monopoly idea was thought to be virtually dead following announcement Feb. 9 by Senator Josiah W. Bailey (D., N. C.), chairman of the Senate Commerce Committee, that he would not request the executive branch of the Government to stop its progress in international negotiations and decisions.

The Senator also announced that he and his committee considered that three out of the four documents arising out of the Chicago international aviation conference were in the nature of executive agreements and hence could be signed by the Government without recourse to Senate consideration and ratification. The Department of State lost no time in announcing the Government's acceptance of the three documents. The fourth is the permanent civil aviation conference which must come before the Senate in due course.

Thus the two obstacles which might have kept the Administration from moving ahead on international matters were removed, and there is strong likelihood that the first decision awarding routes on the North Atlantic will be handed down by the Civil Aeronautics Board, subject to White House approval, either late in March or early in April. It seems certain that the CAB will grant routes to at least one carrier in addition to Pan American, possibly two.

Monopoly Report Blocked

A report definitely favoring monopoly was prevented from coming out of the Senate's aviation subcommittee at the last minute Feb. 5 when opposition within the subcommittee developed from Senators Theodore Bilbo (D., Miss), John H. Overton (D., La) and James Mead (D., N. Y.). It was then decided to call in certain Government witnesses for secret testimony and discussion. Among those appearing Feb. 7 were W. L. Clayton, Assistant Secretary of State and Stokeley Morgan, chief of that department's aviation division; L. Welch Pogue and Edward P. Warner, chairman and vice chairman of the Civil Aeronautics Board, and W. A. M. Burden, Assistant Secretary of Commerce.

At the conclusion of the meeting, Senator Bilbo told a reporter for *American Aviation* that the monopoly report "is dead as hell and you can quote me on that".

Meantime various Government agencies again were being asked by Senator Bailey to comment on the proposal of Senator Pat McCarran to create an All American Flag Line, a single chosen instrument which would be owned and operated by all U. S. airlines jointly. The first Government letter to reach the Senator arrived Feb. 17 from the Department of State, signed by Joseph C. Grew, Acting Secretary. Quite similar to the letter sent to the committee last summer, the Grew letter expressed strong opposition to a U. S. monopoly policy for international aviation.

Despite the flurry in the Senate and the highly controversial nature of the monopoly issue, the situation boils down to this: unless the Senate and the House enact new legislation creating a new air policy, the Administration plans to continue operating under the Civil Aeronautics Act of 1938. This act calls for regulated competition. Almost every Government agency concerned with aviation has strongly opposed a monopoly. There is every indication that the CAB will move rapidly toward decisions. As soon as the oral argument on the North Atlantic applications is heard Feb. 28, the CAB will be able to reach its decision.

Most-awaited Government report on the question is the two-year study on anti-trust angles by the Department of Justice. The report has been ready since last August. Its release is expected early in March.



P-61's Guns—This is the first photo released of the Northrop Black Widow's deadly turret. The four 50-caliber, electrically controlled machine guns have been blasting the enemy both in Europe and the South Pacific for many months. Armors are shown installing the turret's highly complicated mechanism in the plane's crew nacelle.

Branch Says U. S. Will Lead World By Using Regulated Competition

UNITED STATES air transport has led the world under a system of private enterprise and regulated competition, and it will maintain its position of world leadership under the same system in the future, Harllee Branch, member of the Civil Aeronautics Board, declared last fortnight.

Speaking at the annual meeting of the Atlanta Freight Bureau, Branch said that the stimulus for "our outstanding air transportation services in the U. S. has been provided under a policy of regulated competition."

In a forecast of air cargo potentials, Branch asserted that the "wartime perfection of gliders and glider operating techniques" may hold the answer to the development of low cost transportation for bulk movement of cargo by plane.

"Many problems must be solved before air transportation can find its destined place in the carriage of cargo. The first of these problems relates to the development of suitable planes and special attention is being given to the production of planes designed to carry goods at efficient speeds at low costs.

"If the air carriage of freight is to become an important part of our national transportation system it is essential that appropriate terminals be constructed to facilitate that development. The terminals must not only be of sufficient size to handle the prospective volume but they must be so planned in relation to the assembly and distribution of cargo and so designed as to facilitate interchange of shipments between different forms of transportation, especially between air and highway carriers."

With respect to the volume of air cargo, Branch declared that no one could speak

with authority on the subject despite the number of studies of what commodities might seem to offer a favorable market for air transportation.

"These studies have been based largely upon an analysis of the relation of the value of the commodity to its weight, but such studies are not capable of giving definite answers. They only indicate a potential which may never be realized because marketing procedures, buying practices, the lower cost of competing forms of transportation, or a dozen other factors enter the picture.

"In short, a substantial spread between original cost and destination value, with that value enhanced by rapid delivery, is the characteristic which best identifies potential air cargo."

Branch said that it may be expected that air transportation will mean wider markets and larger sales volumes rather than higher prices, and discounted the potential impact of the air passenger traffic on surface carriers.

In the cargo field, Branch said he anticipated that air transportation, "in building a new industry and sustaining a large volume of aircraft manufacturing, will add more freight to the railroads, trucks and water carriers than is diverted from them."

Branch said that since the establishment of the CAB in 1938, the nation's primary system of trunklines has been "very nearly completed," but that a few such routes are still to be added.

"As the air traffic potentials increase there will be not only increasing frequency of service to the large commercial centers but service will also be provided to many smaller communities. In this manner a secondary route system of local services will be established."

TAG First Airline Into Many Invaded Islands

Marine-Army-Navy Task Force Outfit

Transport Link to Front Combat Areas

By WAYNE W. PARRISH

(This is another in the series of articles on aviation in the Pacific)

FAR OUT in the forward area of the Central Pacific is a military airline system that for my money has performed one of the really outstanding air transport jobs of the war.

The outfit is called TAG, which stands for Transport Air Group. The men have dubbed it "The Victory Line" and each plane of its fleet is quickly identified by the white express tag painted on the nose.

By official order within the past month, TAG has become TCG (Transport Carrier Group), but its men consider the new name a misnomer and stubbornly refer to their airline as TAG. You can't make much out of a tongue-twister such as TCG.

This is the story of the first year of TAG's operations. It's the story of TAG as it existed last fall when its headquarters were on Saipan. Since then the outfit has moved on ahead and has added new laurels to its distinguished record.

TAG is a Marine-Army-Navy task force airline which moves into the front line as soon as a new airfield is ready. It's the transport link between the rear bases and the combat area. It has both scheduled and non-scheduled operations. It is fluid, flexible, always on the go, and just about the smoothest piece of operations, considering its location and its mission, that I've ever seen.

It's Rough and Rugged

It's an airline, all right, but don't think of it in the customary airline terms. It's rough and rugged. It has no hangars, no fine buildings, no well-pressed uniforms for its crews, and decidedly no luxury service. It's all out in the open. Its officers live in tents. The personnel often live on C rations. Repairs and maintenance are performed without the benefit of concrete floors and neat tool boxes and the usual assortment of commercial equipment. The boys sweat in the humidity of the tropical climate of the Pacific, they plow through the mud to their tents, and those at the forward end often have been in close proximity to active Jap firing.

But what an airline! Every inch of TAG's routes is over water. Each plane in the fleet is a twin-engined landplane (either Douglas C-47 or Curtiss C-46 Commando). Its nearest operation to the U. S. mainland is many thousands of miles away.

And the record? In one year of operating and moving the headquarters 1000 miles at a time on a half-dozen occasions, TAG never had so much as injured a crew member or passenger. You'll travel a long way before you find the teamwork, the safety record, and the hard-hitting achievements, which make TAG a famous chapter in U. S. aviation history.

TAG is proud of its record of being the first transport group into most of the invaded islands in the Central Pacific. It waits only long enough for the airfield to be usable. The Japs more than often

were still firing on one end of the runway. But TAG has gone in with supplies and mail, and evacuated wounded, in an operation that has to be seen to be believed.

Naval Air Transport Service and Air Transport Command operate into the forward areas. But the feeder systems out in the forward areas are outfits such as TAG. Down south SCAT was performing the same job. SCAT has been publicized, but TAG has done an outstanding job with little recognition.

When it was organized a year ago last fall it was called CENCATS, which stood for Central Pacific Combat Air Transport Service. Some high ranking officer didn't like the use of the word "combat" in the title. So in April 1944 the name TAG was adopted.

Both TAG and SCAT have similar make-ups. The Commanding Officer of TAG is a Marine, Col. Thomas J. McQuade, USMC, of El Centro, Cal., who used to be a University of Maryland football star. His executive officer is an Army man, Maj. Victor C. Swearingen, A. C., of Detroit. The operations officer is a Marine, Maj. Ridgway Baker, USMCR, a naval aviator of Minneapolis. On the Guam-Saipan division when I visited TAG last fall, the operations manager of the division was Lt. Bernard C. McMahon, USMCR, Morristown, N. J., former traffic representative for American Airlines at New York and Washington.

Last fall TAG consisted of four squadrons. Three of them were Marine. One was a Troop Carrier Command squadron (Army). The ground personnel was supplied by the Navy.

Out of a fleet of 60 transports, 45 were C-47's and 15 were C-46's. The fleet has been considerably supplemented since.

Twice I flew with TAG, once from Saipan to Guam and return, and later from Kwajalein in the Marshalls to Tarawa in the Gilberts. Both routes pass close by Jap-held islands. When flying to Guam, for example, we passed the island of Rota which is heavily populated with Japs. The island looked beautiful with its heavy green growth in the afternoon sun and the Jap airfield (with no planes) stood out clearly at the north end of the island.

Longest single hop on the TAG system at that time was the 997 nautical mile run between Eniwetok in the Marshalls to Saipan in the Marianas. Over 1000 statute miles, flown regularly on schedule with twin-engined planes! And not even a reef in between.

TAG started down in the Samoans in the South Pacific late in 1943, but moved up into the Gilberts with the Tarawa invasion, and on north into the Marshalls and then west to Saipan and when I last saw it, TAG was getting ready for moves

farther to the west. The goal is, of course, Japan itself. Every man in TAG wants to get in on that final run.

Engine and plane overhaul is impossible in the forward area. Only essential maintenance is carried on. The C-47 engines are changed after 750 hours, and the C-46 engines at 500 to 530 hours, and sent to Honolulu for overhaul. Planes are sent to Honolulu for overhauling at the end of 1500 hours.

At Tarawa, TAG flew its first plane in on D Plus 10. At Saipan it was D Plus 7. At Tinian it was D Plus 5. These are typical of all. That's moving in right after the fighters.

Up to 1550 wounded were evacuated by TAG from Saipan to Eniwetok over those 997 nautical miles of water, without a single loss. From that point the Army's ATC carried the men to the mainland. But TAG did the initial job.

When surface ships could not get to Tinian during the thick of the battle there, TAG flew rations and ammunition to the troops despite enemy gunfire, and evacuated 2000 casualties. TAG flies in its own doctors who process the wounded to determine who shall be flown out.

Another important TAG function has been the carrying of officers, messenger mail, documents etc., on which forward operation depends. Documents have A-1 priority. Personal mail is Class 3 priority and Government mail is Class 2. Passengers and freight get Class 4 priority. And the passengers are lucky if they have even a bucket seat to sit on—usually the cargo is stacked high.

Had to Beg and Borrow

Being a three-way service organization has not always worked to TAG's complete advantage. It must look to the Marines, the Army and the Navy for supplies, but in actual practice it has usually been dependent upon the island commanders for its supplies. Often it has had to beg and borrow to keep going. Trading had become a fine art last year. But the outlook for ironing out the supply difficulty was good last fall and probably has been worked out by now. The administrative unit is a Marine air group. The Navy furnishes only ground personnel and no planes. TAG itself functions directly under the forward command.

The pilots are young—just youngsters by prewar pilot standards. Many of them had only a few hundred hours when they joined the outfit. But it doesn't take long to roll up hours at the rate of 100-125,140 and as much as 160 hours a month. Most of the pilots were trained in contract schools operated by U. S. domestic airlines, chiefly by American Airlines, PCA, and United. All of the pilots have been trained in airline procedures and TAG itself does its level best to live up to commercial airline operating standards. The first thought is safety if the mission can be accomplished—and this has paid dividends.

Total personnel is at a minimum. Old-time commercial airline personnel would be surprised at the volume of cargo handled by TAG with so few personnel. The total of 183 included 10 officers and 44 enlisted men assigned by the Army, 16 officers and 41 enlisted men from the

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Marine Corps, and 14 officers and 58 enlisted men assigned by the Navy. This total does not include mechanics and operations personnel.

Hourly plane utilization varies considerably according to special missions and combat activity in the forward area. One Marine Squadron had operated over nine hours a day for one month with daytime operations only. Although NATS and ATC do a great amount of night flying in the Pacific, night flying with twin-engined planes in the forward area is obviously impossible. Radio limitations and lack of night lighting on forward fields is another answer.

TAG can be justly proud of its daytime record of rolling up a total of three and a half billion pound miles of cargo and passengers in one 45-day period last fall. The figures by this time are undoubtedly much more impressive, but here are some samples provided me by Lt. McMahon, an old hand at traffic and well known when he was with American Airlines:

First 15 Days of August (1944)

Passengers carried: 8,589
Passenger pounds: 2,120,980
Freight pounds: 782,310
Mail pounds: 569,061
Total pounds: 3,472,351
Pound miles: 1,230,283,126

Last 15 Days of August

Passengers: 5,001
Passenger pounds: 1,257,850
Freight pounds: 653,227
Mail pounds: 592,420
Total pounds: 2,503,497
Pound miles: 1,118,340,148

First 15 Days of September

Passengers: 4,422
Passenger pounds: 1,101,600
Freight pounds: 894,441
Mail pounds: 578,650
Total pounds: 2,574,691
Pound miles: 1,129,660,825

The total pound miles for the 45-day period came to 3,478,264,099. The average passenger weight is figured at 250 lbs., which includes all baggage and equipment carried by the passenger.

Like other military outfits, TAG is "everybody's" airline. Men from all walks of life, the vast majority of them never having had anything to do with aviation previously, are operating the line.

But there are a few airline men scattered about. In addition to McMahon, there was Lt. (jg) George Laufus, USN, formerly with United Air Lines, who was assistant officer in charge of one of the stations.

Lt. Col. Benjamin Redfield, USMCR, executive officer of the Marine Air Group, is a former United pilot and more recently an inspector for the Civil Aeronautics Administration.

Lt. Col. Ed Zonnie, Minneapolis, USMCR, former pilot with Northwest Airlines, was in charge of pilot training and was being given much credit for the job he had done.

Maj. Ned Wright, USMCR, had been with American Airlines and more recently had been airport manager for Pan American Airways at the 36th Street Airport in Miami.

There were many others of note, including such former football stars as Capt. Red Corley who played with Cornell, Capt. Bill Howland, Georgia Tech, Capt. Chuck Myers, Univ. of Wisconsin, all Marine Corps Reserve, and



Two in One—All kinds of cargo are transported by TAG freight crews. At the top, Marines unload one of two small Navy Cub hospital planes from a Curtiss Commando at the Peleliu airfield. Shipped in sections and reassembled at the captured airstrip, the 1200 lb. planes were part of the cargo on a flight from Guam. In the lower photograph, preparations are made to remove the Cubs from inside the Commando. The Second Marine Air Wing transport carried the small planes along with another ton of priority equipment.

Lt. Bill Johnson, USMCR, University of Washington.

TAG has had a good record of operations completed. In one 30-day period in the Marshalls, Gilberts and Marianas,

880 trips were authorized and 876 completed. There were two weather and two mechanical failures. That's real operating.

It's quite an outfit.

Policy on Airfields Built Abroad With U. S. Funds Sharply Assailed

TWO MEMBERS of the Mead Committee on National Defense—Senators James M. Tunnell (D., Del.) and Harold H. Burton (R., Ohio)—have filed with the Senate a report which is highly critical of the Administration's policies on foreign air bases built with U. S. funds, and surplus property disposal abroad, particularly in Africa.

The report stated that neither the United States nor any American airlines have obtained franchises to operate in Africa where several large airfields have been built with U. S. funds. In contrast, the report stated, the British are operating regular commercial lines in Africa as well as are the French and the Belgians.

Records on costs of installations were found poorly kept, accounting on reverse lend-lease transactions was said to be inadequate as no dollar value had been placed on the value of the reciprocal service, and that certain installations, including airports, had been abandoned by the Army and were now being used by our Allies without charge.

The subcommittee found that, although instructions had been issued by the War Department that no disposition should be made of important installations without prior consent or approval of the War Department in Washington, no clear-cut policy has been expressed to guide the responsible officials in the field in the disposition of installations either by an adequate definition of the word "important" or by instructions on the procedure of disposal of "unimportant" facilities. The Navy has instructed its commanders in the field not to abandon Navy installations without approval, on each installation, from Washington, the report stated.

French Will Get Base

The report gave special attention to four airfields, as to costs and the terms of U. S. rights in the installation. The committee found that the Naval Air Base at Port Lyautey, French Morocco, cost \$2,196,782. U. S. rights in this port are governed by the so-called Darlan agreement dated about the time of U. S. landings in North Africa. Navy officials, both in the field and in Washington, seem to be well aware of the postwar value of this airport, both for military and commercial purposes, the report stated.

The Army Air base at Rabat-Sale, French Morocco, was reported, in a subcommittee hearing in Casablanca to have cost this Government \$1,000,000. At a hearing in Caserta, near Naples, Army officials said the base had cost \$352,000. The Sale base formerly was a French installation and will be turned back to the French as is, the report stated. Later at Casablanca the committee was told that the "out of pocket" cost to the U. S. for this base was \$52,000. Some of the difference in these figures is due to treatment of some of the equipment as movable property.

The John Payne Field at Cairo, Egypt (Army) cost \$2,653,260 of which approximately seven percent represents reciprocal aid from the British. The committee found that cost records here were in better condition than at the other fields investigated but that "condition of

title and rights of the U. S. in the airport is far from being as clear and as favorable to the U. S. as is desirable." British rights in the field were much clearer, the committee said, and even a British squadron was in possession of the field.

The Mellaha Army Airfield at Tripoli, Libya, now is under construction and is expected to be completed in March or April of this year. Title and rights of the U. S. in the field are far from clear, the report stated.

In a prefatory statement to the Senate, Sen. Tunnell pointed out that U. S. Military officials also are uncertain about this country's rights in the strategically located Azores, except that presently use is through permission from the British, although the islands are owned by Portugal.

Elmira Claim Settlement

The War Department has recommended to the Senate Claims Committee that new legislation be drawn up authorizing the Treasury to pay the Elmira Area Soaring Corp., Elmira, N. Y., \$39,397 to settle a claim against the government for losses arising from a glider pilot training program it conducted for the army air forces.

Pogue Urges Putting Interim Council Into Force as Promptly as Possible

FAILURE TO PUT into force as promptly as possible the Interim International Aviation Council set up by the recent International Air Conference at Chicago would be a tragedy, L. Welch Pogue, chairman of the Civil Aeronautics Board, declared last fortnight.

Speaking before the Council on World Affairs at Kansas City, Pogue described the world-wide aviation council as "a design for international collaboration in a field where the self-interest of all demands that it be a success."

Pogue said that the three "great achievements for aviation of the Chicago Conference require the support of our public opinion." The three points were the Interim Council, the Transit Agreement and the Air Transport Agreement.

"Like the sea, the air started as a closed sky, blind to history's lessons," he said. "For 25 years it fretted under restrictions and barriers. The Chicago conference gave the key with which the world can open the door to freedom."

With respect to the so-called "Two Freedoms" agreement, Pogue said "the exchange of these two privileges puts landlocked countries and cities on a basis as favorable as countries located on the borders of oceans insofar as transoceanic air operations are concerned."

He said the Air Transport agreement "opens up the world to the free establishment of international routes, the principal limitations being that they must be reasonably direct out from and back to the homeland."

Pogue said the fundamental issue with respect to the method of determining the amount of service to be allowed each

Aviation Calendar

March 26—Civil Aviation Joint Legislative Committee meeting, Washington.

April 4-6—Society of Automotive Engineers, National Aeronautics meeting, Hotel New Yorker, New York.

April 16—World Air Transport Operators meeting, Havana.

May 6-9—International Aviation Fraternity, first annual convention, Miami Beach.

May 20-27—Pan American Exposition, Dallas.

Oct. 31-Nov. 3—1945 National Aviation Clinic, Oklahoma City. Pre-clinic conferences opens Oct. 27. (Arrangements tentative, depending on ODT regulations in force at that time.)

Minnesota Aid Appointed

The Minnesota Department of Aeronautics has appointed Carl A. Posey assistant commissioner of aeronautics, replacing William M. Beadie who has resigned to become associated with the Aviation Services Co. in Minneapolis.

Lee Heads Committee

John C. Lee, president and director of Menasco Manufacturing Co., has been chosen chairman of the Los Angeles Chamber of Commerce Aviation Committee for the year, succeeding Theodore C. Coleman, vice president of Northrop Aircraft, Inc.

international operator "could be stated in terms of whether the nations of the world, whether large or small, should have an open opportunity to participate in international business wherever it can be developed."

While the Chicago Conference reached no final provisions for economic regulatory control of international aviation, Pogue declared that "I am not one of those who feel sad because of all these problems were not settled at Chicago. The failure to decide them erroneously was a much greater success than would have been an agreement on any unsound basis."

"The attitude of many countries today with respect to air trade and travel routes of the future is in marked contrast to what it was when international air transportation was not a business, but was primarily an instrument of national policy," he said.

"In the early days of its development, as history shows, every nation was very jealous of its position and inclined to exact the highest price possible for the use of its air space by an international air line desiring the privilege of flying through it."

"However, now that the world is becoming really air-minded and that international air transportation holds such promise of developing rich trade and travel routes, perhaps as great or greater than any we have known in the past, a new attitude is appearing."

This attitude is particularly evident among the smaller nations, who uniformly desire to be on the air trade and travel routes of the future.

Line to be Drawn on Types Of Non-Scheduled Operators

Charter Contract And 'Taxi' Service Form Categories

By KENNETH E. ALLEN

THE NON-SCHEDULED investigation, now definitely set by the Civil Aeronautics Board for hearing March 27, is expected to result in the drawing of a definite line of cleavage between types of non-scheduled operators.

As preliminary plans shape up for the hearing different lines of thought develop for the "taxi" service operator and the charter-contract services.

Spokesmen for the "taxi" operators indicated that they will vigorously oppose economic regulation which would be of an all-inclusive nature. They claim that such regulation would stifle whatever prospects they may have of making a financial showing in the postwar transport picture.

An indication of this feeling was voiced by the Civil Aviation Joint Legislative committee, representing seven industry associations, which went on record as being opposed to any economic regulation of non-scheduled air operations, either by the federal or state governments.

Representatives of the National Aviation Trades Association which has membership on the legislative committee reached unanimity of thought on this phase of postwar aviation legislation during the meeting in Washington.

Safety Rules to Change

This was regarded by some observers as setting the trend of testimony which will be presented at the non-scheduled hearing.

Another factor tying in with the hearing was the announcement by the CAB's Safety Bureau that it will begin shortly a study looking toward standardization of safety regulations for non-scheduled air operators to cover standards of aircraft and equipment, competency of pilots for daylight and instrument operations and operating practices.

Robert D. Hoyt, chief of the CAB's Safety Rules and Education Division, said any changes in safety regulations would be directed toward placing charter operators on a systematized business basis in order to discourage the "fly-by-night" operator. He pointed out that the present safety regulations are not specific enough to adequately cover the private flyer.

Hoyt said the proposed changes would not need to go as far as those now governing scheduled air carriers. For the purposes of definition, he said, no line would be drawn between the charter operator and the contract carrier, but that distinction probably would be made between the non-scheduled passenger and cargo carrier.

This latter point ties in with the CAB's present move to set up categories for transport type planes insofar as safety regulations apply. Weights and landing

speeds for cargo aircraft under this system would be higher than those permitted for passenger-type aircraft.

One point which the small operators make in connection with the proposed economic regulations is the fact that the greater the regulation, the higher the cost of operation.

An example of this showed up in the WTS program, where in 1940 the cost per flight hour was \$10.78. As regulations increased, the cost by 1943 has risen to \$29.65 an hour with the same quality of pilot being turned out.

Several suggestions have been made as to drawing the line between the "taxi" operator and the charter-contract carrier. One is that planes of five or six passenger capacity should be classified as "taxi." Another is that the classification should follow the suggested revision in Part 24 of the CAR, wherein light aircraft would be classified as those weighing 5000 pounds or less. These would be termed "taxi" planes for the purposes of non-scheduled regulations.

The Civil Aeronautics Administration's advisory committee on non-scheduled flying is giving the hearing top priority on its agenda. W. L. "Jack" Nelson, executive secretary, said he expected the group to go along with the opposition to any economic regulations which might have a hampering effect on the small operator.

The commercial airlines, likewise, are taking active interest in the non-scheduled investigation. Their attention apparently is being directed primarily toward the contract operator, who holds out the threat of competition when sufficient aircraft become available for any large-scale operations.

Nor are the airlines overlooking the fact that they are certificated to carry on charter operations. Economic regulation in this field has a direct interest to them from this standpoint.

Two New Commanders

Two squadrons in the Naval Air Transport Service Pacific Wing have been taken over by new commanders recently.

Comdr. Vernon A. Dorrell, USNR, former Mid-Continent Airlines official, relieved Lt. Comdr. Clifford E. Lamplough, USNR, as skipper of AirTransRon 13 in the Southwest Pacific, and Lt. Comdr. John R. Mackroth, USN, took over the Pacific Wing maintenance squadron of NATS, VR-10. Comdr. Dorrell was relieved as commander of AirTransRon 3 at Olathe, Kan., by Comdr. Jack Thornburg, USNR, original skipper of VR-13. Lt. Comdr. Mackroth succeeded Comdr. E. B. von Adelung, USNR.

Photogrammetry Honor Given Navy Office Head

The American Society of Photogrammetry presented the Sherman M. Fairchild annual award for outstanding work in aerial photography to Philip G. McCurdy, senior photogrammetric engineer and chief of the photogrammetric section of the Navy's Hydrographic Office at its 11th annual meeting Feb. 15 in Washington.

Photogrammetry, the science of preparing maps and charts from aerial photographs has been used as the basis of 90 percent of military intelligence during the war according to the Army and Navy. Speakers at the annual meeting included Lt. William A. Bostwick, USNR, who was in charge of the unit which prepared the shoreline sketches used by our armed forces in the Normandy invasion; Maj. John G. Foster, AAF, formerly commanding officer of a photo-squadron in the South Pacific, and Lt. Comdr. Charles Clark, USN, commanding officer of Photo Squadron VD-4 in the Central Pacific.

New officers are O. M. Miller, president; Col. Gerald Fitzgerald, first vice president; Harry G. Ott, second vice president; Leon T. Eliel, Bennett Jones, J. L. Buckmaster, Edmund S. Massier, and Virgil Kauffman, directors.



In Their Working Togs—Pacific Wing commanders of the ocean hurdling Naval Air Transport Service are shown discussing problems developed by expanding Pacific battle lines. Squadron commanders are: standing left to right, Lt. Comdr. John R. Mackroth, VR-10; Comdr. V. A. Dorrell, VR-13; Comdr. D. L. Mosker, VR-2; Lt. Comdr. M. L. Hoblit, VR-12; and Lt. Comdr. W. F. Peterson, VR-11. Seated are Capt. D. W. Tomlinson, commander of NATS' Pacific Wing, and his chief staff officer, Comdr. John E. Harlin.

British Tariff Barriers Loom Against U.S. Aircraft Makers

Australia Is Least Favorable; Africa And India Better

(This is the first of a series of articles on tariff situations which American manufacturers may face in exporting aircraft and parts in the postwar period.)

THE EFFECT that tariffs and other import restrictions may have on postwar sales of American aircraft and aircraft parts to the United Kingdom and other parts of the British Empire still presents a far from clear picture with a great deal likely to depend on wartime developments in the manufacturing industry and the effect they will have on manufacturers' demands for tariff protection.

In the United Kingdom, for example, the aircraft industry has been expanded just as it has in this country out of all proportion to normal demands, and it is extremely likely that higher tariffs may be asked to protect as great a portion of the markets as possible. Offsetting this, however, is the fact that greater development of transport types in this country may necessitate the use of American equipment on British airlines to compete successfully in the international field, and thus counter any move for higher duties.

Broad Classifications

Australia, which had no aircraft industry before the war, has developed one as a wartime measure, and this may affect both its own position and that of New Zealand, where aircraft manufacturing at present is limited to an assembly plant.

India, likewise devoid of aircraft manufacturing before the war, is becoming industry conscious, and is talking in terms of its own plants in the postwar era. The only major British nation in which the position apparently will remain unchanged is the Union of South Africa where aircraft, aircraft engines, aircraft parts, and radio equipment for aircraft use are all admitted duty-free.

Even the prewar tariff picture in the United Kingdom is somewhat confused, since duties were levied on broad classifications, and where items such as instruments and radio equipment were specifically listed, it is difficult to determine whether they would be considered as part of the plane, or as specific items by themselves. This is still further complicated when it comes to the matter of spare and replacement parts.

In general, prior to the war, aircraft, aircraft engines and power plants, assembled or not, were subject to a 10 percent ad valorem duty on landed cost in the United Kingdom. This meant that transportation costs and commissions also were included in the value subject to duty. Altimeters, ammeters, compasses—both gyro and magnetic—and engine instruments, however, were specifically listed as scientific instruments, and as such were subject to a key industries duty of 33 1/3 percent. Wireless equip-

ment, electric motors and batteries likewise were listed separately, and subject to a duty of 20 percent.

Assuming that the United Kingdom will return to its prewar tariff policy following the war, the American manufacturer will face a disadvantageous competitive position not only with British manufacturers but with all aircraft manufacturers in the British Empire since all the items listed above were given preferential status, and admitted duty free from British nations. The prospect of selling parts or materials for assembly in a British nation such as Canada to avoid the duty is likewise very limited as 50 percent of the value of the finished aircraft parts must be derived from work or materials within the empire if the article is to be entitled to preferential status under the prewar regulations.

Prewar aircraft duties in other parts of the Empire vary, some being more and some less favorable than those existing in the United Kingdom. Most favorable to the American manufacturer are the Union of South Africa and India. The former imposes no duties on aircraft, aircraft engines or parts and has recently reaffirmed this position in a new list of tariffs; while the latter subjects all aircraft, parts, engines, processed aircraft materials, and even plane tires and tubes to a standard three percent ad valorem duty regardless of whether they are imported from an empire nation or a country outside the empire.

In New Zealand, flying machines, engines and parts including necessary controlling gear therefore specially suited for flying machines, on declaration that they will be used solely in the manufacture or completion of planes, are subject to a general tariff of 10 percent ad valorem

plus a surtax of 22 1/2 percent of the duty. The same items are admitted free from the Empire under a British preferential tariff, but are subject in this case to a primage duty of three percent ad valorem. On equipment and replacement equipment items the New Zealand laws are far from specific. However, it is specifically stated that inner tubes for use on flying machines take the same rate as flying machines rather than the higher rate for tires, while parachutes are classified as life saving apparatus and admitted duty free. Flying machines and parts are specifically exempted from the 20 percent sales tax.

Australia Specific

Probably the least favorable of all major nations in the British empire to American aircraft sales is Australia, with the likelihood that if any changes are made, they will be in the direction of raising imposts due to the wartime development of an Australian aircraft industry. Under the prewar and present rates, a general ad valorem tariff of 10 percent is levied on planes, and other aircraft including balloons and parachutes; and a general ad valorem tariff of 15 percent on parts and materials used in the manufacture or repair of planes and other aircraft including aircraft engines. In addition both aircraft and aircraft parts are subject to an additional primage duty of 10 percent ad valorem, and at present to a special war tax of 10 percent of the combined duty and primage. Aircraft and aircraft parts from the British Empire are under preferential treatment, and are not subject to either the general or the primage tariff.

Australia is far more specific than the United Kingdom and the other Empire nations in what constitutes aircraft parts. In regard to spark plugs, security must be given that such goods will be used only in the manufacture or repair of planes or other aircraft. In regard to all other parts, the importer must make a declaration on the face of the entry that the goods so entered will be used only in the manufacture or repair of planes or other aircraft.

Import Licenses Needed

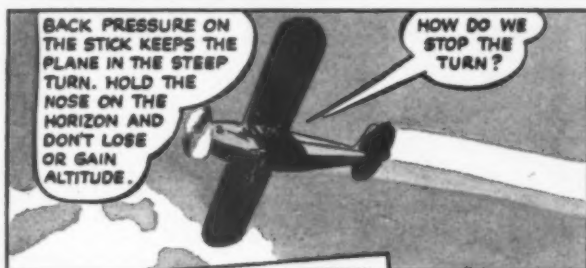
Under a list of such parts are included: all parts of planes and other aircraft (except wooden propellers and complete planes or other aircraft imported in an unassembled condition ready for assembly) imported for assembling into new machines; angles, aluminum alloy; bars, aluminum, aluminum alloy, brass for brazing and silver soldering, bronze, steel; channels, aluminum alloy; engines; glass, laminated, safety and unshatterable; metal parts; navigation instruments; piece goods, airplane linen; radiators; rods, aluminum alloy; flexible steel and wire rope; aluminum, aluminum alloy and plain or timed steel sheet; vegetable fibre felted and impregnated with a fire resistant chemical for use as an acoustic and flame proof lining; electric, double pole, totally enclosed switches; aircraft timber; aluminum alloy and steel tubing; wheels; aluminum alloy and high tensile steel wire.

In addition, in both Australia and New Zealand import licenses must be obtained by importers in advance of shipment.



Making a Mosquito— Britain's

Mosquito is being produced at de Havilland Aircraft of Canada. Photo shows installation in a plane at Toronto of the two Rolls Royce Merlin engines, from which the bomber gets its speed.



New booklet, "How to Fly a Piper Cub", covers the fundamentals of flying with over 50 step-by-step photos and descriptions. Many other facts, full-color pictures of Piper Cubs. Send 10c in stamps or coin for postage-handling. Write Piper Aircraft Corp., Dept. AA35, Lock Haven, Penna.

IS YOUR TOWN READY TO FLY?

It should plan landing facilities now—for its citizens and its future. The booklet, "What Your Town Needs for the Coming Air Age," illustrates various types. It covers benefits, where to build and how to start. For your free copy write Piper Aircraft Corp., Dept. AA35W, Lock Haven, Penna.

16 mm. SOUND FILM—"The Construction of a Light Airplane." For distribution points write: Supervisor, Audio-Visual Aids, Extension Services, Pennsylvania State College, State College, Penna.



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1. What would it cost, in gas and oil, to fly from Chicago to New York in a Piper Cub?
Less than ten dollars.
2. How long does it take to learn to fly a Piper Cub?
8 hours instruction required before soloing.
3. What is the longest a Piper Cub engine ever ran continuously in flight?
736 hours continuously.
4. Will it be easy to buy a peacetime Cub?
Yes, with a moderate down payment and easy terms.

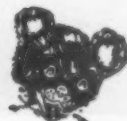
This lesson and others that will follow explain only the fundamentals. See your Piper Cub dealer for actual flying instruction. Write us "Plane Quiz" questions you want answered.

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Grumman XP-50



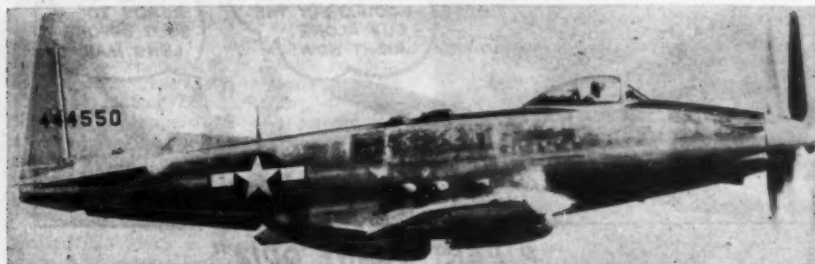
Curtiss XP-42



Curtiss XP-46A



Northrop XP-56 Dumbo



General Motors XP-75



Bell XP-77

Radical Principles Flight Tested in 14 New Fighter Planes

Fourteen experimental fighter planes have been declassified by the Army, and none of them will get into combat, but they have served their purpose as flying laboratories. Some of the radical ideas incorporated in these designs may yet face the enemy in new and still different warplanes. In addition to the nine pictured here, the declassified list includes the Curtiss XP-37, Republic XP-41 and XP-69, Vultee XP-66 and North American RP-64.

These experimental ships range from modifications of conventional designs to radical departures from accepted aircraft principles. All have been flight tested by the Air Technical Service Command and discarded because of too long takeoff runs, poor stall characteristics, structural weaknesses, or performance that fell behind what was expected and did not justify their full scale production.

Two of the most unusual in the group are the Northrop XP-56 Dumbo and the Curtiss XP-55 Ascender. The former is the first true flying wing, and the fuselage is little more than an elongated engine nacelle. Elevator and lateral controls are at the wingtips, while fixed vertical fins give the fuselage a sausage-like appearance. The XP-56 is powered by a radial engine driving two three-bladed contra-rotating pusher type propellers.

The Ascender reintroduced the canard principle that was employed by the Wright brothers on their first plane before discovery of the airfoil. Its elevator controls are in the extreme nose, while wing and engine are behind the pilot. Rudder controls are at the ends of the swept-back wings, and the plane is powered with an Allison 1710 engine driving a pusher propeller. An innovation on the XP-55 which may have application in postwar private craft is a compressed air device for jettisoning the propeller in the event the pilot is forced to bail out.

The twin-engine McDonnell XP-67 is a batlike combination of flying wing and conventional design. It is powered by supercharged Continental engines and uses turbo-exhaust for jet thrust to add to its power. It was designed as a flying destroyer mounting six 37 mm cannon. Principal objection was that it took too long to get off the ground, although flight characteristics are described as normal.

The General Motors XP-75 likewise was handicapped by too long a take-off run.



McDonnell XP-67

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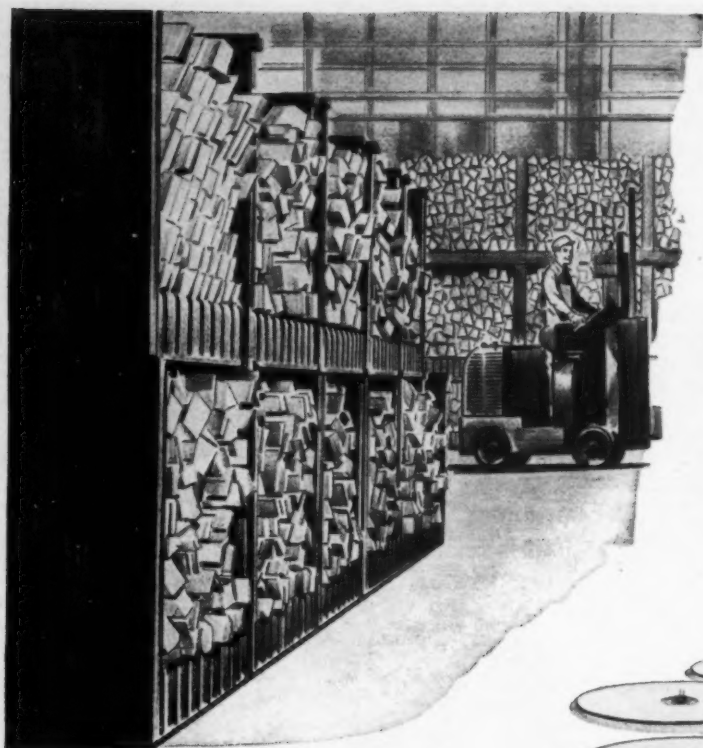


UNDER THE SHADOW OF THEIR WINGS
OUR LAND SHALL DWELL SECURE.

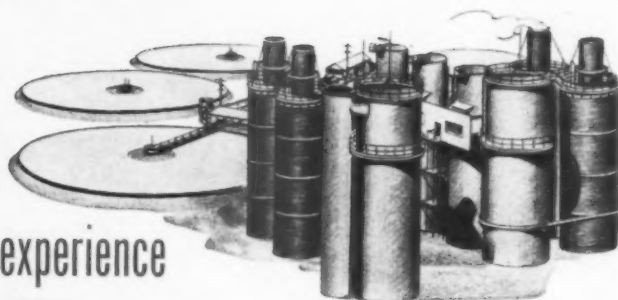
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Its was originally intended as a composite airplane to use assembly parts already in production for other aircraft including P-40 wings, F4U landing gear and A-24 tail. The finished product, however, emerged as a completely new design with an extremely thin airfoil and peculiar shaped rudder. A 3,000 hp. Allison engine drives the twin contra-rotating propellers.

Vultee's twin-boomed, bullet shaped XP-54 Swoose Goose was the first Army pusher-type fighter since the Bell XFM-1. It was built almost entirely of magnesium, and introduced a low-drag airfoil section and other features such as flush-riveted fender-finish skin. It is powered by a Lycoming in-line engine.

The all-wood Bell XP-77 was built at a time when metal shortages loomed critical, and was designed for speed and maneuverability as a possible answer to the Jap Zero. It failed to live up to expectations, however, and there was a tendency for the all-wood construction to crack. It is now being considered as a possible trainer because of its speed. A Ranger V-770 engine drives the small, two-bladed metal prop.

Jennies on Transport Run Started Company On Aerial Mapping Job

Few may realize that a company which in 1919 planned to run an airline between Philadelphia, Atlantic City and New York now covers a large section of the U. S., the Caribbean, South America, Canada and Alaska. When Jennies proved impractical as transport planes, the company—Aero Service Corp.—turned to aerial photography and the more distant parts of the hemisphere.

Believed to be the oldest flying organization in the world, it has developed from pictorial oblique photography from low flying planes to vertical photography and map-making from high altitudes under the direction of Virgil Kauffman. As the largest company of this kind in the U. S. it has mapped nearly one-third of



Miller

Kauffman

the U. S. as well as large areas in Central and South America, the Caribbean Island, Canada, Alaska and Newfoundland. Using single engine Beechcrafts at altitudes above 20,000 feet the large islands of the Caribbean were mapped from island bases many water miles away. Since they have worked hour after hour at these high altitudes for years, the pilots of Aero Service say they are champion longtime oxygen consumers.

Mapping requires an exact maintenance of position over straight line courses for



Backward is Forward—Elevators are at the front and engine and propeller at the rear of the XP-55 Ascender (top) experimental fighter just announced by Curtiss-Wright Corp. Rudders of the unusual ship are out near the ends of the swept-back wings. Technically a design of this type is known as a canard, and has been advocated as an aid to maneuverability and shorter take-offs. The first Wright Brothers plane was of a canard type. The Vultee XP-54 (bottom) is a twin-boomed pusher.

hundreds of miles of back and forth overlapping flights to fully map large areas.

One postwar application of aerial photography will enable experts to determine from a color photograph the types of trees growing in large inaccessible forest areas. This is expected to save much expense in large scale timber cruising operations.

Trained engineering ground parties assist the company in another activity, the making of large-scale topographic maps with two-foot contour intervals for aiding many types of construction, such as war plants, airports, and new highway routings. Oil companies have found that aerial maps and photographs are effective aids in the development of new oil fields.

Company officials are proudest of Aero Service's safety record. In more than 25 years of continuous single engine aircraft operations involving millions of miles of flying in this and other countries the company never had an accident involving loss of life or injury to personnel.

Its postwar plans include expansion into other fields, a program which is being developed by Guy Miller, formerly chief of flight of the Edward G. Budd Co.

Aluminum Landing Mats

Development of a new lightweight aluminum mat suitable for landing strips is announced by Aluminum Company of America. Contracts for manufacture have been let by U. S. Army Engineers to U. S. Gypsum Co., Chicago, and United Steel Fabricators, Wooster, O., for 12,000,000 square feet. The mat is built up of a large number of sections, each approximately 15 inches by 10 feet. Assembly of the planks into a landing mat is effected by fitting adjacent planks together by means of a slide lock. The new mat is said to weigh one-half as much as the older steel mat used for landing strips.

Four Control Centers Are Set Up on Islands In Pacific War Zone by CAA

Four control centers have been set up by the Civil Aeronautics Administration on islands in the Marshalls and Marianas to provide bombers and fighters on the new "Tokyo Run" with the same Air Traffic Control service to which they are accustomed in the United States. The new stations will be staffed and operated by CAA personnel under Army direction, and were established in response to an Army request which stated:

"The CAA has contributed in a large measure toward establishment of air traffic control procedures currently employed between the mainland and Honolulu, and it is the desire of this headquarters to continue these joint operations in our plans for expansion."

The new centers are being set up at Johnston Island, Kwajalein, Guam and one other point yet to be named, and were to be activated during February. They will serve under the Oceanic Air Traffic Control which serves both the Army and the Navy. In addition to providing personnel, the CAA through its new Ninth Regional Office in Honolulu will coordinate the work with the OATC. The OATC will establish standards of operation and determine policies.

Already in this war, CAA engineers and maintenance men have supervised construction of signals and communications stations at 204 places outside the U. S. to guide our airmen in their fighting and freighting about the globe. Even radio ranges rooted from American soil have gone overseas to fight, with 50 of these ranges now guiding airmen in such remote places as Ascension Island, Brisbane, Canton Island, Adora on the Gold Coast, and Northeast India.

Flight Tests of New Butterfly Tail Trainer Recall 1939 Sailplane Using Vee Principle

RECENT INTEREST in the Vee or "butterfly" tail as a result of its use on an experimental Beech AT-10 trainer recalls that a similar arrangement was employed by Robert M. Stanley, chief engineer of the Niagara Frontier Division, Bell Aircraft Corp., on his sailplane, the Nomad, which was flown at the National Soaring Contest in 1939, and which twice broke the official American altitude record and made a number of rather long distance cross-country soaring records.

Stanley reports that he first came across the idea in 1935 while in his final year at Cal-Tech when he learned of a Polish design which incorporated the Vee tail principle. As far as he could determine, the Polish design never progressed beyond the idea stage, and in 1939 he decided to give the idea its first practical test, and in June of that year the Nomad made its first flight with the unconventional empennage. Coincidentally, when applying for patents on the system of control linkage he had devised for use with the Vee tail, Stanley discovered that Polish patents were held covering almost the identical arrangement, although there was no record of it having been used on an actual plane.

Following the demonstrated success of the Nomad, Stanley received many requests for design details concerning the unusual empennage from aircraft manufacturers, but was never in a position where he could actually install it on a powered plane.

The handling characteristics of the Vee tailed aircraft, he reports, are entirely normal, and there is no way for the pilot to distinguish its handling characteristics from those of a plane equipped with a normal empennage, even during acrobatics. The Vee tail in no way effects stall characteristics or the ability to side-slip, he says and the cockpit controls are identical to those of conventional planes. In both the motorless glider and the twin-engined Beechcraft the installation of the Vee tail has not changed the response to stick and rudder control, and Stanley believes that this would hold true for a single-engined plane.

The principle practical advantages of

the new style empennage are more on the manufacturing and service side, although there does appear to be slight improvement aerodynamically. They include such considerations as reduced structural weight, although the total area of the Vee tail and the conventional empennage are approximately the same; decreased cost of manufacture; simplification of spare parts requirements due to interchangeability of right hand and left hand components; decreased height while on tricycle gear; and less turbulence during stalled maneuvers.

From the strictly military viewpoint the unorthodox arrangement permits a top turret gunner to shoot directly aft, partly eliminating the need for a tail turret, with a consequent reduction in weight. It further offers less danger to the pilot during bailout.

For the private plane, greater ease of storage in a crowded hangar appears as a major advantage; and the ability to raise the tailplane up out of weeds or similar obstructions should prove of value.

A Transport First

Transport planes have had a high record for moving rapidly into newly-captured airfields on Pacific islands, but until the Luzon invasion they never have been first. But on Luzon a C-47 of the Troop Carrier Command was the first plane to land on the first captured Lingayen strip—an hour before the first fighters showed up.

Gen. Arnold Improving

Gen. H. H. Arnold, chief of the Army Air Forces, is slated to return to his office about March 8 after a month's absence due to ill health. Confined to an Air Force convalescent hospital, Gen. Arnold is reported to be greatly improved. He is up and around again, his office staff stated. During his absence, Lt. Gen. Barney M. Giles, deputy Air Force Commander, has been in charge.

Jet Fighter for Use On Carriers Will be Ready To Join U. S. Fleet Soon

A new jet-propelled fighter which can be used on carriers is in production for the Navy and will be ready soon to join the fleet, according to Artemus L. Gates, assistant secretary of the Navy for air. He said the plane's flight characteristics were still secret, but added that it will play a spectacular part in forthcoming operations.

Secretary Gates also disclosed that the Midway and the Coral Sea, first two of the Navy's 45,000-ton aircraft carriers, will be launched on or about March 15 and April 1 respectively, the former at Newport News, and the latter at the New York Navy Yard.

Reporting on a tour of Pacific bases from which he and Vice Admiral Aubrey W. Fitch, Deputy Chief of Naval Operations for Air, had just returned, Secretary Gates emphasized the role that patrol planes, both sea and land based, are playing in the war against the Japs. At Mauritai, he said, the seaplanes—mostly PBM's and some PBV's and PB2Y's—arrived a day or so after our first forces to take up patrol and search operations. The same thing was true at Leyte, at Mindoro and at Lingayen Gulf.

The big boats, he said, are carrying out their searches every hour of the day and night, some based in the Philippines and the Central Pacific going as far as Formosa. These seaplanes, he added, are more continuously in contact with the enemy than any other type of naval aircraft, are doing their job alone, and are sinking ships steadily. The seaplanes operate until land bases can be prepared, and move forward to further advanced bases while land based search planes—PB4Y's and PB4Y-2's take over.

"Passport to Texas"

Hailed as Goodwill

Smartest goodwill idea seen in aviation for many a moon is the "Airman's Passport to the Republic of Texas" issued by *Southern Flight* magazine at Dallas. The three-way pocket folder carries photograph and description of the bearer and the signature of George Haddaway, editor, as "Minister of Air without Portfolio."

A statement by Gov. Coke Stevenson welcomes airmen everywhere to visit Texas and another statement says that the passport "serves additionally as a reminder that at this stage in world history there's damn little free air left and it's your bounden duty to work, sweat, dig and fight for an extension of the principle of Freedom of the Air throughout the world."

Another panel reads: "Notice to Keepers of the Peace. If bearer of this passport to Texas runs afoul of the law, either this side or west of the Pecos, kindly give same every benefit of the doubt. Bearer has been checked, double-checked and cross-checked. There has been no horse stealing in bearer's family for over two generations and same has proved ability to handle with decorum the better brands of Red Whiskey. He faithfully reads Dixie's only aviation magazine. Although bearer is often times unfamiliar with all laws South of the Smith and Wesson Line, bearer may someday become a citizen of Texas and is herewith approved as qualified."



First Butterfly—Shown here is the Nomad, a sailplane built by Robert M. Stanley, now chief engineer of the Niagara Frontier Division, Bell Aircraft Corp., which twice broke the official American record for gliders in 1939. Its Vee or butterfly tail is similar to that on a recently announced experimental Beechcraft. Stanley got the idea from a Polish design.



M A G N I T U D E

This is not a snowdrift. This great pile is composed entirely of machined chips of high-strength aluminum alloy. ¶ These chips are produced by the machining operations on the A-26 Invader wing spar caps, fabricated into complete wing assemblies by Beechcraft. ¶ The magnitude of the production job assumed by Beechcraft on the A-26 Invader program is symbolized by the fact that it takes a bulldozer to sweep up the chips from the machining operations on only eight parts of the thousands incorporated into the A-26 Invader wings.

Beech Aircraft



C O R P O R A T I O N

BEECHCRAFTS ARE DOING THEIR PART

WICHITA, KANSAS, U. S. A.

Want a Laugh?

There are Quite a Few Chuckles
Here if You Try Your Hand
at This Examination

SOMEbody with a keen sense of humor contributed an "examination paper" to the January issue of *The Log*, official organ of the British Air Line Pilots Association (BALPA). While all of the meaning may not be too evident to U. S. airmen who have not been operating over the Atlantic, the "examination" is reprinted in full for as many laughs as you can pull out of it—and there are quite a few there. Here it is:

NEW STANDARDS

Recently a copy of an examination paper designed to test the suitability of candidates for an aviation career found its way into our offices. Frankly, we're not interested in your answers, so don't bother to send them in.

The average person will score 24 per cent.

Arithmetic

Time 2¼ hours. Total marks 61.

- Three aircraft fly 1100 miles at an average speed of 200 m. p. h. on five successive nights, arriving on schedule with an average wind of 21 knots at 10,000 feet. Is this (a) a miracle, (b) a lie, (c) P. A. A.?
- The payload of an aircraft is 2200 pounds. The crew's weight is negligible, crew's baggage 500 lbs., freight 150 lbs., Corporation's correspondence 800 lbs. How much baggage could be taken by the six passengers weighing 150 lbs. each if: (a) The baggage contains feathers; (b) The baggage contains lead; (c) The crew's baggage is a stewardess; (d) The crew's fruit is off-loaded?
- If three Dakotas and one Liberator cancel once, how often will two Dakotas cancel twice? Explain briefly how you arrived at your destination.
- An aircraft is flying across the Bay of Biscay at 10,000 feet, where the wind is S. W. 15 m. p. h., the temperature is 10°C. A passenger complains that the orange in his lunch box contains a bomb. Two lights are seen immediately ahead. Corunna is off the air. How and when will you reach: (a) Point A; (b) Point B; (c) Lundy; (d) Monday; (e) Stalag Luft VI.
- A Mig. III of the Soviet Airline, flying at 200 Russian metres at a speed of 413 versts per hour, leaves Krasnai E. Cryod-Nakycelz (40.00 E. and 61.30 N.) at 06.70 Russian Zone time. Ten minutes later a Drotskyii leaves Ekyczsie and heads east with four comrades on board, at 09.16 G. M. T. the samovar bursts causing a forced landing. The aircraft uses 816 litres per hour and landed with 28 Ukranian gallons left. (a) What is its capacity and range in Siberian kilometers. (b) Would you fly in it; (c) Petrol at 64 kopecks or vodka at 13 roubles?

Note: This problem first appeared in the week-end supplement to "Pravda."

General Knowledge

Time 24 minutes. Total marks 65.

- Distinguish between the following: (a)

WPB Aircraft Division Branch Heads Named

The functions of the new Aircraft Division of the War Production Board have been outlined by Director Henry P. Nelson who states that the Division's first aim is to "keep at peak performance the operation, maintenance and repair of all civilian aircraft, airlines and facilities."

The responsibilities will be carried out by the Maintenance Branch, headed by A. W. Lewis; the Requirements Branch, headed by E. W. Ruddick; the Production Branch, for which no director has been named; and the Planning Branch, headed by E. A. Bolster. The functions of the former Project Review Branch have been transferred to the Project Review Section of WPB's Construction Bureau and the Aircraft Priorities Branch has been dissolved.

Other responsibilities of the Division include programming the production of commercial aircraft and maintenance parts and maintaining contact with other Government agencies interested in civil aviation.

An attempt to aid the aircraft industry to "readjust its methods of operation and production into the peacetime economy" will be made by a continuous study of aircraft facilities and manpower and by a study of all material pertinent to the transitional and complete reconversion periods, especially as it relates to the aircraft industry, which may be released by other agencies of the Government or by business or civic organizations.

Coming and Boeing; (b) T. W. A. and T. A. C. A.; (c) Lyneham and Whitchurch.

- Where are: (a) Bristol; (b) The Yorks.; (c) The full reserve?
- (a) Who said "I never bother about the Met?" (b) Where is he buried?
- Britain's first good commercial aircraft was built in (a) 1962; (b) 1948; (c) 1952. (d) U. S. A.
- Three famous sayings are given below, together with a selection of persons. Can you attribute to each his original saying?

A fool and his baggage are soon parted.—Load Control

Time to spare, go by air.—General Goering

The sky is our playground.—Gander Control

- Did Confucius really say "B. O. A. C. is my idea of a ...?"
- If one aircraft looks like this and another like that and another like nothing on earth, is this because: (a) It is in the air; (b) It is a Boeing; (c) The runway developed a swing?

Let Your Mind Alone

Marks will be awarded in indirect proportion to the time taken to complete this part. So test the speed of your reactions.

- What about Boost?
- A pilot announces his intention of doing a full-load take-off from Britain's main Civil Airport with Britain's latest air liner. Would you wait until the fire brigade had finished before you went to tea?
- (a) Describe the Air Ministry. (b) Now do it again without giving offence.

Blue Tile Bathroom In Duke's New Plane

A "royal castle of the sky" is waiting to take the Duke of Gloucester and his Duchess about Australia when he takes up the Governor-Generalship there. Especially built by A. V. Roe, the super luxury airliner is outwardly an ordinary four-engined Avro York, but the internal fittings rival even Hollywood dreams of postwar airliners.

The Duke will have a stateroom upholstered in red leather as his office from which he will be able to maintain communication with the ground at all time. At the rear of the 78-foot fuselage is an ultra-modern blue tile bathroom. Elaborate restrooms, sleeping quarters and individual saloons are provided for the equerries and ladies in waiting; and there is an up-to-date kitchen with range, refrigerator and modern gadgets.

Black Widow Has Radar

Much of the success of the Northrop P-61 Black Widow as a night fighter is due to radar equipment, the War Department now has revealed. The radar equipment which is used for sniffing out enemy planes at night has hitherto been referred to by the official phrase "detection equipment" for reasons of military security.



Aids Job-Finding—Earl D. Prudden, vice president of the Ryan School of Aeronautics, spent more than a week away from his office in San Diego to go to Tucson to take over direction of job-finding for employes terminated when the Air Forces concluded the contract with Ryan there. Shown at a desk covered with telegrams to other aviation employers, Prudden was busy lining up new assignments for Ryan employes.



Finish the Fight — with War Bonds

Coast-to-coast record: 6 hrs., 3 min., 50 sec.

It's 11:38 o'clock in Seattle on the morning of January 9, 1945. A new Boeing giant of the skies—the C-97 Army transport—lifts into the air and heads east.

One hour—up 30,000 feet and smooth sailing. Two hours—45 below outside, warm and comfortable inside. Three hours—high above storms over the Dakotas. Four hours—the mighty Mississippi far below. Five hours—over Ohio.

Six hours—3 minutes—50 seconds—and the big ship arrives in Washington, D. C. . . . 2323 miles at an average speed of 383 miles an hour with tail winds averaging about 45 mph . . . a new coast-to-coast record!

Behind this historic flight is the bright blue-print of a new era in air travel. For

the C-97 transport is the military forerunner of the great post-war luxury airliner—the Boeing Stratocruiser.

With the advent of this new super-transport, the rosy promises of tomorrow's aviation become realities. You'll lunch in the East, dine on the West Coast. You'll travel in luxurious comfort, and at surprisingly low cost.

A huge double-deck, four-engine airplane, capable of carrying up to 100 persons, the Boeing Stratocruiser will have operating ranges up to 3500 miles with ample fuel reserves. When flying at over-weather altitudes, atmospheric conditions inside the pressurized cabin will be equivalent to comfortable low-level flight.

The Boeing Stratocruiser is the newest member of a famous family of four-engine champions. The aerodynamic advancements built into this big ship have been thoroughly war-tested in the B-29 Superfortress, and are the result of long experience in the design and development of the Boeing Flying Fortress, Stratoliner and Clipper. The record-breaking performance of the C-97 offers striking evidence of what you may expect from this new Boeing airliner.

When victory is won, the same skill in design, engineering and manufacture which has established Boeing leadership in the big bomber field will bring you the Stratocruiser and other advancements in air transport. You can be sure . . . if it's "Built by Boeing" it's out in front.

DESIGNERS OF THE B-29 SUPERFORTRESS • THE FLYING FORTRESS • THE NEW STRATOCRUISER
THE KAYDET TRAINER • THE STRATOLINER • PAN AMERICAN CLIPPERS

BOEING

Senate Committee Will Take Up Airport Legislation First

Chosen Instrument Bill Blocked From Immediate Hearing

By GERARD B. DOBLEN

AIRPORT legislation is slated to claim first attention of the aviation subcommittee of the U. S. Senate Commerce committee as a result of developments last fortnight which gave the proponents of the chosen instrument theory in international aviation a setback and ruined their hopes for immediate hearings on the McCarran All American Flag Line bill.

The switch in position occurred when advocates of a community company were blocked in their attempts to file immediately an interim report favoring the chosen instrument policy. In the meantime, officials of the Commerce Department and the Civil Aeronautics Board convinced the subcommittee of the necessity of early hearings on bills which would write the national airport plan of the Civil Aeronautics Authority into law.

After a three and one-half hour meeting of the subcommittee, Sen. Josiah W. Bailey, chairman, said that hearings on the airport bills would start soon. Two bills, S.2 by Sen. Pat McCarran (D., Nev.) and S.34 by Sen. Bailey embrace the national airport plan recommended by the CAA. They probably will receive the bulk of the consideration in the hearings.

Transportation Commission

The so-called Lea Omnibus bill (H. R. 674) which combines re-organization of the Civil Aeronautics Authority and the Air Safety Board as independent agencies, and sets up the national airport plan, appeared in the Senate Feb. 15. It was introduced by Sen. Olin D. Johnston (D., S. C.) by request and was referred to the Interstate Commerce committee of the Senate. It is S. 541.

Sen. Ernest W. McFarland (D., Ariz.) introduced a bill (S. 556) which provides for the establishment of a commission of nine members to study and report legislative recommendations on a co-ordinated transportation policy affecting aircraft, railroads, busses and trucks, including their communication needs. The bill was referred to the Interstate Commerce committee.

The commission would be composed of two members of the Senate Interstate Commerce committee to be appointed by the President of the Senate on recommendation of the committee chairman; two members of the Interstate and Foreign Commerce committee of the House to be appointed by the Speaker on recommendation of the committee chairman; the Secretary of State; the chairman of the Interstate Commerce Committee, the chairman of the Federal Communications Commission, the chairman of the Civil Aeronautics Board or their designees and

a representative of the public to be appointed by the President with the advice and consent of the Senate, who shall be chairman of the commission and be paid a salary of \$8,000 a year.

The bill states: "It shall be the duty of the commission to make a full and complete study and investigation of interstate and foreign commerce by means of aircraft, railroads, busses and trucks, including the relations of communications thereto, with a view to determining the interrelation of these forms of commerce and their communication needs, and the Commission shall make such reports and legislative recommendations to the President and to the Congress resulting from its study and investigation as it deems necessary or desirable in the establishment of a coordinated and comprehensive transportation policy. The Commission shall make its final report and recommendations not later than two years after the date of enactment of this act."

Authority would be given the Commission to hold hearings, subpoena witnesses and records, utilize the services and facilities of departments and agencies of the government. A sum of \$25,000 would be provided for carrying out the work of the Commission.

Sen. McFarland said that he has considered the need for such a commission and attendant study for the past two years, and he is hopeful that the Interstate Commerce committee, of which he is a member, will give early consideration to his bill so that Senate action may be forthcoming in the near future.

Asked whether the legislation was sponsored by any particular group in the transportation field, Sen. McFarland said emphatically "No." While he declined to give his personal views on the broad question of transportation policy pending further thought and study, it has been learned through some of the senator's associates that he believes in an overall transportation system where each of the component parts are independent of each other.

Sen. McFarland said the Interstate Commerce commission has made a rather thorough study of communications as they affect transportation and that the time has come when Congress should give thought to a coordinated policy in order that transportation may obtain the maximum benefits of new developments in radio and radar as they apply particularly to the question of safety.

He emphasized that while all forms of transportation are prospering today under a false war boom, the postwar era would undoubtedly see a return to conditions which resulted in many forms of transportation operating at a loss, some of which had to be bailed out through government funds. The Commission's study and recommendations would go into these prospective postwar problems thoroughly if his bill passes and the purposes of the Act are carried out, McFarland stated.

On the House side, aviation hearings had to give way to other legislation. Hearings on the Lea Aviation bill (H. R.



Visitor from Brazil—Brig. Gen. Vasco Alves Secco, right, representative of the Brazilian Air Minister in the Joint Brazil-United States Defense Commission, is shown with John Paul Riddle, president of the J. P. Riddle Instructors' School, during the General's recent visit to the school in Coral Gables, Florida.

674) probably cannot get under way until about March 20.

Meanwhile, sources close to Rep. Clarence F. Lea (D., Cal.) indicated that the chairman of the Interstate and Foreign Commerce Committee would resist all attempts to break up his so-called omnibus bill into its component parts. Efforts will be made by a determined group to at least segregate the national airport plan from the other considerations in the bill.

Under the terms of a bill introduced by Rep. Lindley Beckworth (D., Tex.) an appropriation of \$50,000,000 would be made available annually to aid individuals and firms in the development of improvements to aviation (H. R. 2012).

The bill provides that: "Whenever the Secretary of War, the Secretary of the Navy, and the Administrator of Civil Aeronautics shall jointly determine that it is in the national interest to extend financial assistance for the purpose of aiding any individual or company in carrying on of experimental work in connection with the development of new types of aircraft or the improvement of existing types of aircraft, or in connection with other developments in the science and art of flight, grants may be made for such purpose from the appropriations made pursuant to this Act. There is authorized to be appropriated not to exceed \$50,000,000 per annum for the purpose of carrying out the provisions of this Act."

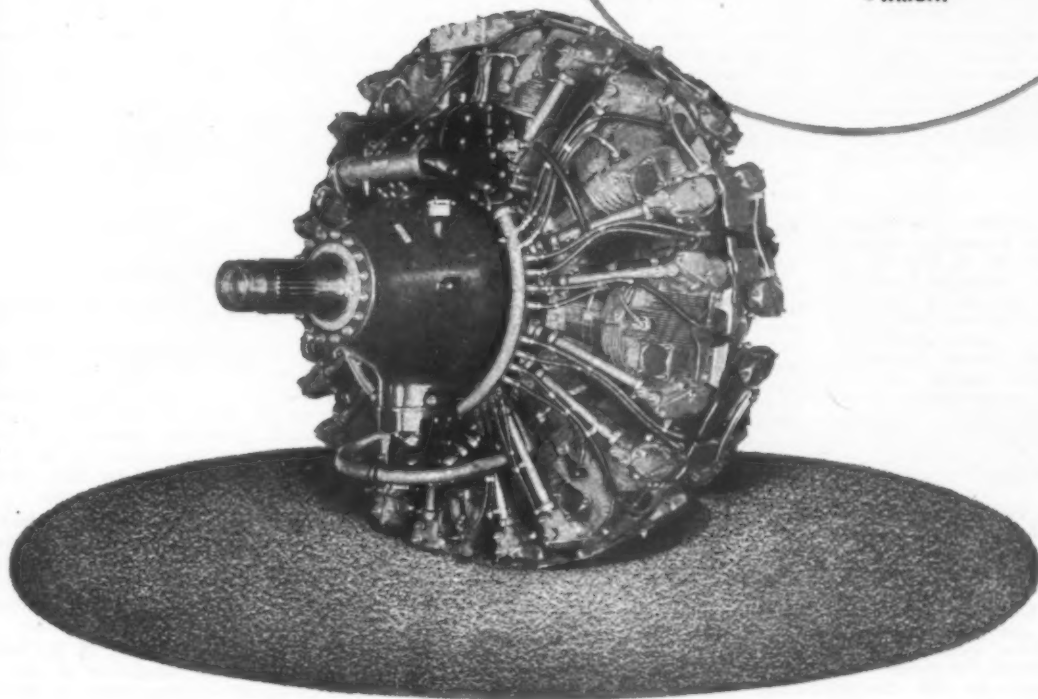
Rep. Gordon L. McDonough (R., Cal.) introduced two bills—H.R. 2016 and H.R. 2017—which would amend existing acts so as to provide for the issuance of a certificate of credit in the amount of \$1000 to veterans for the purchase of surplus property.

A bill introduced by Rep. Alvin E. O'Konski (R., Wis.) H. R. 2070 would grant specific rights to persons assigned to cadet schools or glider schools and who failed to qualify for flying service through physical defects or other causes.

Another bill by O'Konski (H. Res. 124) would authorize the creation of a special committee of the House to investigate the production of aircraft and accidents resulting therefrom.

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Wright Aircraft Engines . . . put power plus in the giants of the skies—Figuring prominently in the sterling performance of thousands of America's great bombers and cargo planes are the Wright engines which power them, and Bendix-Scintilla Aircraft Ignition equipment which helps deliver the vital spark.

SCINTILLA MAGNETO



DIVISION OF

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SIDNEY, N. Y.

"BENDIX-SCINTILLA" AND "SCINTILLA" ARE TRADEMARKS OF BENDIX AVIATION CORPORATION

Congressional Roundup

Large Fund for CAA

President Roosevelt, through the Bureau of the Budget, has submitted to the House of Representatives supplemental estimates of appropriations for the Department of Commerce for the fiscal year 1945, totaling \$389,000, all of which except \$30,000 relates to aviation.

A breakdown of the amounts requested and the agencies involved, follows. \$110,000 for the Civil Aeronautics Administration to be used in the operation of a fleet of 17 planes at the standardization center, Houston, Texas, which were formerly under the jurisdiction of the War Training Service; \$84,000 to CAA to provide for the reclassification of certain positions in the Signals Division of the Federal Airways Service; \$23,000 to CAA for additional clerk hire and equipment required to issue an estimated 200,000 pilot licenses to military-pilot personnel; \$42,000 to enable CAA to start certain development work in radar and \$100,000 to expand Weather Bureau facilities to meet the needs of international operations of air carriers under contract to the Army and Navy.

Lea Bill Criticized

The Oklahoma Utilities Commission has issued an order expressing opposition to the Lea Bill (H. R. 674) in its present form and has requested Frederick G. Hamley, general solicitor of the National Association of Railroad and Utilities Commissioners to appear before the House Interstate and Foreign Commerce Committee to "oppose passage of such bill, unless the bill is amended so as to reserve to the states exclusive jurisdiction over all intrastate air commerce."

State Data Fund Asked

It is understood that officials of the Civil Aeronautics Administration during their recent appearance before the Commerce-State-Judiciary subcommittee of the Appropriations Committee requested reinstatement of a \$30,000 item for compilation of aircraft and pilot data to be furnished state aviation agencies for law enforcement and planning purposes. The item was eliminated by the Budget Bureau from original CAA budget requests. Appropriation committee clerks said the Commerce-State-Judiciary department bill would be reported to the House about March 15.

Steamship Bill Bottled Up

Shipping interests have nearly given up hopes of getting before Congress a Merchant Marine Committee sponsored bill permitting steamship companies to operate air transport services. Rep. Schuyler O. Bland (D., Va.) chairman of the Merchant Marine and Fisheries Committee, re-introduced his bill (H. R. 5387) several weeks ago but the bill has been held up in the Speaker's office over the question of referral. Shipping interests have little hope that the bill will be referred to the Merchant Marine committee and expect to make their fight for favorable consideration before the Interstate and Foreign Commerce and Rules committee.

37 Private Stations Licensed

E. K. Jett, member of the Federal Communications Commission, told a House Appropriations subcommittee, that FCC had licensed 37 privately owned and operated airport-control stations during fiscal 1945. Under questioning by Rep. Clifton A. Woodrum (D., Va.) chairman of the subcommittee, Jett said this was only a small portion of the total number of airport-control towers in operation throughout the U. S. as both the Civil Aeronautics Authority, the military services and Aeronautical Radio, Inc., operate hundreds of ground stations.

"Is something going to be done some of these days to standardize aviation radio broadcasting?" Woodrum asked.

"Under existing rules and plans, you may make arrangements as a private flyer, before you take off, with the aeronautical radio stations for service along the route that you intend to fly for a small charge, about a dollar a contact," Jett replied.

Jett said that today there are 395 scheduled aircraft radio transmitters licensed by the Commission and that during the first year after VE-Day it was expected that 3000 would be licensed.

'Kickback Ban' Proposed

Comptroller General Lindsay Warren and Lt. Col. Frank S. Rowley of the Legal Division, War Department, have asked the House Committee on Executive Expenditures to approve legislation outlawing "kickbacks" or other gratuities made by subcontractors to other subcontractors or prime contractors or agents. Reinstatement of an Act of 1872, repealed in the last Revenue Act, which would prohibit Government officials from leaving their posts to represent private companies with cases against the Government also was recommended by Warren.

New Credit Firm Formed

Incorporation of a new company, Interstate Credit Corp., of Texas, with main offices at Fort Worth, has been announced by H. A. Shaffer, president, and H. D. Cook, secretary-treasurer of the Interstate Credit Corp., of Minneapolis. The new company has purchased the outstandings of Aircredit, Inc. Gene Royer, formerly vice president and general manager of Aircredit, will remain as president and general manager of the new company.

59½ Million for Navy Aviation

The Senate has passed the Navy public works bill (H. R. 626) appropriating \$1,500,539,500 of which \$59,416,500 would be used for aviation facilities.

During consideration of the bill, Sen. David I. Walsh (D., Mass.) chairman of the Naval Affairs Committee, pointed out that the House committee had reduced the Department's request from \$74,500,000 to \$59,416,500 to enable further study of the Navy's plan to expend \$15,083,500 for the construction of a naval air field near Annapolis for the training of midshipmen.

Postwar Landing Rights In Bermuda Sought In Return for 42 Millions

Sen. James M. Tunnell (D., Del.) told the U. S. Senate that this country has invested \$42,000,000 in an Army air base at Bermuda under a lease which in no way provides for U. S. commercial landing rights in the postwar era.

Pointing out the Bermuda base has strategic value both from the viewpoint of national security as well as for commercial usage, Sen. Tunnell said he felt this country's rights under this lease should be broadened as soon as possible.

He told the Senate that Bermuda is 760 miles from Halifax, 750 miles from Portland, Me., 700 miles from Boston, 697 miles from New York, 746 miles from Philadelphia, 794 miles from Baltimore, 806 miles from Washington, 683 miles from Norfolk, 746 miles from Wilmington, N. C., 803 miles from Charleston, S. C., 865 miles from Savannah, Ga., 913 miles from Jacksonville, Fla., 956 miles from Miami, 960 miles from Windward, Cuba, 870 miles from Mona, P. R., 860 miles from San Juan, 1350 miles from Trinidad, 2801 miles from Dakar, 2800 miles from Gibraltar, 1806 miles from the Azores, 2494 miles from Reykjavik and 1042 miles from Argentina.

General Investigation Of Priorities Unlikely

The threatened general investigation of air transportation priorities appears to have blown over following the submission of a complete report by the War Department to a U. S. Senate committee of the facts surrounding the issuance of an A-1 priority for a dog owned by Brig. Gen. Elliott Roosevelt, then Col. Roosevelt.

Sen. Tom Stewart (D., Tenn.) chairman of a special military affairs subcommittee, decided no hearings should be held on the general question of priorities unless additional authority was received from the full committee.

Sen. Styles H. Bridges (R., N. H.) who offered the original resolution to investigate the matter relating to the air transportation of the dog, was reported as favoring an investigation of not only airline priority practices in general but all special privileges relating to wartime travel. If such a resolution were passed by the military affairs committee, full Senate approval would have to be voted, as funds would be needed to carry out the investigation.

In its report, the War Department stated that Col. Ray W. Ireland, assistant chief of Staff of ATC, had issued the A-1 priority for the Roosevelt dog after Mrs. Ann Roosevelt Boettiger, Col. Roosevelt's sister, had requested that the animal be shipped from Washington to the Colonel's wife in California. Maj. Gen. Harold L. George, ATC chief, said in his report that "Establishing an 'A' priority for the dog was unauthorized under regulations relating to air priorities. A serious mistake was made and it cannot be justified."

RYAN Research

cuts this 59 minute job to 15 minutes and lowers costs \$100,000 yearly...

... Another Ryan Step Toward Better Airplanes at Lower Cost

THE PROBLEM: In welded stainless steel parts, the conventional method for relieving the internal stresses and removing the welding flux, involves:

- Step 1 - 15 Minutes defluxing in acid tank
- Step 2 - 2 Minutes sandblasting per part
- Step 3 - 12 Minutes stress-relieving in air furnace
- Step 4 - 30 Minutes pickling in acid bath
- TOTAL - 59 Minutes**

THE SOLUTION: A sodium carbonate salt bath, developed in the Ryan laboratory, revolutionizes the entire stress-relieving and defluxing process as follows:

- Step 1 - 5 Minutes stress-relieving in salt bath
- Step 2 - 10 Minutes cold pickling
- TOTAL - 15 Minutes**

THE ADVANTAGES: By eliminating two operations and cutting the required time to one-fourth, this new Ryan process not only saves wartime taxpayers \$100,000 yearly, but is speeding up production of fighting craft urgently needed in the Pacific war theatre.

THE CONVENTIONAL method for relieving the internal stresses caused by welding certain vital stainless steel aircraft parts, has for years involved a heat treatment requiring *four* operations and fifty-nine minutes.

Approaching the problem from a fresh angle, Ryan laboratory technicians have evolved a completely new sodium carbonate salt bath procedure for stress-relieving and defluxing such parts. Maintaining the same high quality, the new Ryan process is completed in two operations requiring a total of only fifteen minutes.

Today... the analytical skills of Ryan laboratory technicians and the ability of Ryan designers and engineers are devoted to the creation of combatant aircraft. Tomorrow... Ryan will again devote itself, with the same directness for efficiency and economy, to solving problems of peacetime aviation.

**RELY ON RYAN
TO BUILD WELL**

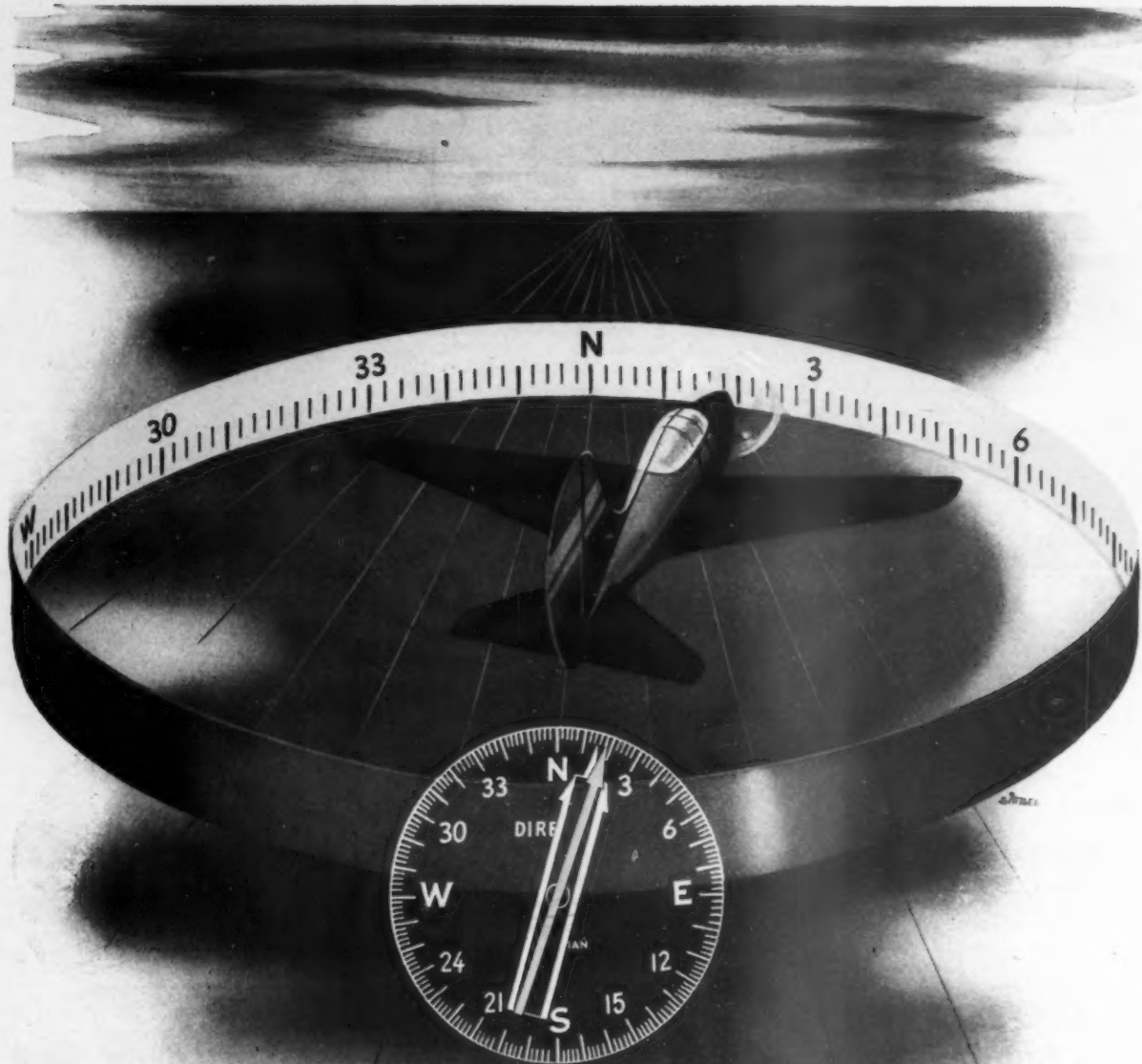
1922-1945



RYAN Airplanes

Ryan Aeronautical Company, San Diego - Member, Aircraft War Production Council, Inc.

DESIGNERS AND BUILDERS OF NAVY FIGHTING PLANES AND EXHAUST MANIFOLD SYSTEMS

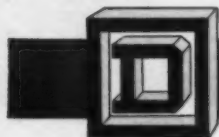


FLIGHT-LIKE INDICATION is the characteristic of the Kollsman Direction Indicator which makes it so well liked by many pilots. All of the points in azimuth are visible at all times, reading clockwise as on the compass rose of a navigation chart. A distinctive memo pointer may be set to the desired course so that any deviation is immediately apparent. The pilot merely keeps the pointers matched. These features make the instrument easy to read, easy to follow. Excellent performance characteristics also aid the flyer. The Direction Indicator is self-contained and fits the standard compass mounting, requiring only a light connection.



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NACA Achievements Told As House Approves Funds

Aid Given Military Forces Included In Hunsaker's Report

THE HOUSE of Representatives on Feb. 8 passed the Independent Offices Appropriation bill for 1946 (H. R. 1984) which contains an appropriation of \$26,014,393 for the National Advisory Committee for Aeronautics.

Printed hearings of the House committee, released the day the bill was reported to Congress, contain a thumbnail sketch of NACA activity and accomplishment as presented by Dr. Jerome C. Hunsaker, chairman of the NACA committee. A brief summary of these accomplishments, as outlined by Dr. Hunsaker, follows:

WINGS—Successful application has been made of full-span flaps to combat aircraft permitting a large lift increase and at the same time maintaining adequate control.

PROPELLERS—The committee has succeeded in evaluating propeller performance at high forward speeds and has shown that it is possible to have high propeller efficiency at speeds as high as 500 miles per hour.

FLYING AND HANDLING QUALITIES OF AIRCRAFT—The Committee's investigation of the flying and handling qualities is producing fine results. Sufficient correlation has been achieved between wind tunnel and flight that it is possible to recommend changes to improve flying qualities on the basis of wind tunnel tests before the plane has been built.

LOADS ON AIRCRAFT—The greatest emphasis during the past year has been on the determination of the loads on a plane wing in terminal velocity dives. The work on gust loads on aircraft is also continuing as on large long-range aircraft, particularly when overloaded in wartime conditions.

STRUCTURES—There has been increased emphasis on the provision of more rigid aircraft structures so that the wings of a plane will not buckle up to the design load condition. The Committee's structures research laboratory has completed a number of studies of the buckling of aircraft structural elements and wing surfaces to provide aircraft designers with needed information in order that they can design the required types of wings.

HEAT DE-ICING OF AIRCRAFT WINGS—The Committee's pioneering work on the use of heat for wing de-icing has borne fruit in that Liberator (B-24) bombers are now coming off the production line using thermal wing de-icing system that was developed in the Committee's laboratories. The same is true of the PB2Y which operates in Alaska and northern waters.

FLYING BOATS—The results of studies of a large number of specific flying-boat designs . . . have been correlated and this has resulted in the development of a set of principles by which an optimum

type of high-speed flying boat hull may be designed.

GUIDED MISSILES—The Committee has been co-operating with the military services . . . Little information has been released by our military services on the applications that have been made of these "secret weapons."

JET PROPULSION—The Committee was able to conduct the first tests of a jet-propulsion plane in a wind tunnel under full forward speed and altitude conditions. These tests provided valuable information on the operation and performance of the jet-propulsion units in the plane as well as suggested improvements in the installation of jet units so that the speed of the plane may be measurably increased.

ENGINE INSTALLATIONS—On one plane alone . . . the Committee's high-speed wind tunnels save up to six months production by producing a rapid solution to a ducting problem . . . range and load of another plane was increased by use of a new type of cooling baffle and a new type of fuel injection. One military fighter the Committee's work has shown that by installing an aftercooler the engine output could be increased by 400 hp.

POWER PLANTS—The Committee has made tests of a conventional air-cooled aircraft engine in combination with an exhaust-gas turbine to be geared to the engine for increasing the engine power output rather than for supercharging. These tests have shown that important gains in engine economy may be realized, particularly for long-range operation of large aircraft.

PISTON AND PISTON RINGS—Through measurement of piston temperatures under actual engine operation the Committee has been able to determine the effect of piston temperatures on engine power.

FUELS—The Committee's fuels and lubricants laboratory has been concentrating on the valuation of aviation fuel components.

ENGINE STRESSES—The Committee has developed methods of applying strain gages to the actual moving parts of an operating engine. These methods will permit learning the stresses in hitherto inaccessible parts of an engine and should be of real assistance in improvement of the mechanical features of engine design.

Single Tail B-24s Built

A single tail version of the B-24 Liberator is now being built for the Army at the Ford Motor Co. Willow Run plant. The modified version with a single vertical tail fin is not yet in quantity production, and the changeover from the present twin-rudder version will be gradual. The new B-24 is an Army modification and is not to be confused with the recently announced Navy PB4Y2 Privateer. No details on the new Army version have yet been released.

7680 Work on NACA's

Research Activities

Testimony of officials of the National Advisory Committee for Aeronautics before a House Appropriations subcommittee revealed that there are 7680 persons now employed by NACA in connection with its research activities. This represents an increase of 1290 employees over fiscal 1945, made necessary, officials stated, because of an increase in the number and importance of problems and projects that have been referred to the Committee.

The NACA's request for funds for 1946 includes an item of \$500,000 for research contracts with American universities which continues the policy of letting out research projects to educational institutions which are equipped to do special jobs which cannot be undertaken by NACA because of a lack of certain equipment and facilities.

ATA Favors Bill Making Airport Federal Area

Col. Edgar S. Gorrell, president of the Air Transport Association, has announced that ATA is in favor of the passage of the Randolph bill HR 2097 which would in effect set up the Washington National Airport as a Federal reservation, subject to Federal laws and regulations.

Col. Gorrell emphasized the necessity for immediate Congressional action on the Randolph measure in order to eliminate difficulties arising from the inability to determine whether some act was performed in the District of Columbia or Virginia. The confusion, as far as the airlines are concerned, has hinged largely about tax and operational matters, Col. Gorrell stated.

Under the provisions of the Randolph bill, neither the laws of Virginia nor the District of Columbia would be applicable within the territory occupied by the Airport. The bill would give the airport a status similar to nearby Fort Myer and Arlington National Cemetery.

Motor Vehicle Theft Act May Apply to Aircraft

Conscience and the eighth commandment represent the principal deterrents which have protected until now the plane owner from thefts in interstate commerce.

Forseeing the time in postwar aviation when additional protection may be required, Sen. Pat McCarran (D., Nev.) has introduced a bill which would amend the National Motor Vehicle Theft Act to include in its provisions aircraft which might be stolen and flown or moved across state lines. The Senate passed the bill Feb. 12, and similar House action was expected.

Need for such legislation became apparent when the Supreme court ruled in a case involving the interstate transportation of a stolen plane that the National Motor Vehicle Theft Act did not apply to aircraft. All types of vehicles covered by the Act were definitely named but aircraft was not among those listed.

ENGINEERED FOR



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State Economic Regulations Of Lines Assailed by Pogue

CAB Chairman Sends Emphatic Letter to Utilities Commission

CONTENDING that no urgency exists for the proposed economic regulation of air commerce by states, L. Welch Pogue, chairman of the Civil Aeronautics Board, has told the National Association of Railroad and Utilities Commissioners, the Board feels that legislation of this character should not be passed during 1945.

Pogue made known the views of the Board in a letter to Frederick G. Hamley, of the Legislative Committee of the National Association of Railroad and Utilities Commissioners. The letter, in an extension of remarks, was published in the Congressional Record by Rep. Clarence F. Lea (D., Cal.).

"Air transportation has been, and is, essentially interstate in character, and it is our belief that it will continue to be predominately interstate for some years. Thus, a comparison of the relative volume of passenger movements by types of carriers shows that in 1933, 45 percent of the railway passengers and 54 percent of the highway passengers moved in intrastate commerce (Federal Coordinator of Transportation, passenger traffic report), whereas in Sept., 1940 (the last month for which the Civil Aeronautics Board has a country-wide traffic survey) less than 16 percent of the air carriers' passengers moved in intrastate commerce, and they accounted for less than eight percent of the total passenger-miles," Pogue wrote.

Local Lines Interstate

"In the past, intrastate services have developed in close relation to the long-distance or interstate services. The Board looks forward to a considerable growth of local air services, but even these services will be largely interstate in character, operating across state lines and carrying chiefly interstate traffic.

"Of the approximately 600 applications for domestic service on file Jan. 5, only 47 applications were for service within a single state. Air transportation still is in its development state, and no public interest will suffer from postponing the inauguration of state economic regulation. On the contrary the development of air transportation could be seriously prejudiced by the regulatory program which you propose. We recommend therefore, that no action be taken during the 1945 sessions of state legislatures.

"If the states undertake active economic regulation of air transportation, the Board agrees with your committee that uniformity in legislation and regulation is desirable. However, the Board must point out that seldom have uniform state statutes been uniformly interpreted and administered, and it entertains grave misgivings lest the development of air commerce be prejudiced by a multiplicity

of regulation and by a lack of uniformity in regulation."

Pogue pointed out the essential differences between air transport and other forms of transportation as follows: (1) air transportation is predominately long-distance, and hence, interstate transportation. (2) the air carriers do a relatively small volume of business (the industry's aggregate operating revenue being approximately equivalent to that of one medium-size railroad for the prewar years) and operate with relatively narrow profit margins, and hence are unable to bear the burdens of multiple regulation; and (3) the air transportation industry is still in its developmental stage when every opportunity to bring low costs must be safeguarded if the industry is to achieve the volume of operations which the public interest requires.

"If your Association should, nonetheless, sponsor a program of state economic regulation of air commerce, we believe that every effort should be made to avoid the conflicts between state and federal regulations, and particularly that duplicate regulation of the same air line by both federal and state authorities should be avoided. To insure this result, each air line should be responsible to only one regulatory agency rather than to many regulatory bodies. Therefore, the proposed uniform bill should, in our opinion, be modified to redefine the jurisdiction of the state authority, limiting state economic control to those air carriers which are not subject to federal regulation. It is our considered judgment that the air transportation industry cannot properly develop and give maximum service to the public under a system of multiple regulation. The industry's large potential contribution to the growth of the country's commerce and the welfare of every community, as well as its vital relation to national security and defense, warns against any governmental action, state or federal, that might handicap or forestall its imminent expansion.

"We should seriously consider the precise nature of the public's interest in air transportation. In the absence of artificially imposed obstacles, it is certain that every important community in the country will be linked by reasonably direct services to every other important community. Air transportation can make all regions of the nation as accessible as the different parts of the state now are in terms of surface transportation . . .

"Furthermore, the board sees no jus-

Different Today

What changes can occur in 25 years!

On March 10, 1920, the New York State Legislature adopted a resolution urging Congress to enact federal laws for regulation of aerial traffic, instead of leaving it to individual states to pass conflicting legislation.

tification for some of the duplicating regulations which are contemplated by the proposed uniform state air commerce bill. We refer specifically to requiring interstate carriers already certificated by the CAB to obtain certificates of convenience and necessity from the states. Similarly that interstate air carriers keep accounts according to any system differing from that prescribed by CAB would impose a heavy burden on interstate commerce; and even if that system is followed, the requirement that the interstate air carriers report specifically on their intrastate operations, segregating their accounts accordingly, would involve difficulties and expenses quite disproportionate to any resulting benefits."

Rep. Lea in introducing the letter in the Congressional Record stated:

"There is a proper field for the states by legislation and administration to cooperate with the federal government in the regulation of air navigation," Rep. Lea stated in introducing the subject matter into the Record. "The prospect, however, of 48 States attempting by legislation and regulations to cover the broad field of aviation must be looked upon with apprehension by all true friends of air commerce."

Pilots Fight State Bills Duplicating Safety and Economic Regulations

The Air Line Pilots Association expects to take a prominent part in the fight against proposed state legislation which would result in setting up duplicating economic and safety regulations affecting interstate carriers in intrastate operations.

A spokesman for the Pilots stated that the airmen stand to suffer a two-fold injury if some of the bills now before state legislatures are enacted. They feel that any adverse effect which the economic regulations might have on the financial return of the airlines might ultimately be reflected in the wage scale of the pilots and through duplicating state regulations on safety and certification pilots would be probably required to obtain licenses and pass physical examinations in all of the states in which they operate.

It was pointed out that at least two states now have licensing laws which require interstate airline pilots to obtain flying credentials in addition to those issued by the Federal Government. While the registration fees are nominal, the pilots distrust the trends involved and believe any extension of this type of regulation would lead to other measures of an even more restrictive nature.

Hence, local chapters of ALPA are watching with considerable interest all developments in state legislatures dealing with these two phases of state regulations. The National Association, too, is taking a definite part in the fight to defeat these bills.

The position of ALPA generally on economic regulation by States of the airlines is identical to that of the operators themselves, as expressed through the Air Transport Association. The airline operators believe that duplication state economic regulations would retard the development of aviation in the postwar era.

Ryan Warns State Regulations Could Bring 48 Aviation Barriers

ONE OF THE THREATS of economic barrier to the development of air transportation lies in proposals for state regulation and multiple state taxation, Oswald Ryan, member of the Civil Aeronautics Board, stressed recently in an address before the Cincinnati Chamber of Commerce.

Proposals for state system of economic regulation which would provide for the issuance of certificates of public convenience and necessity by state commissions, if adopted, hold the promise of rearing "48 state barriers to the progress of air transportation," he said.

Ryan declared that the U. S. air transport industry has been built upon three foundation stones of national policy, and this policy should be continued if the industry is to attain its maximum development.

He listed the fundamentals of national policy as:

1. The encouragement and development of air transportation as a privately owned and managed enterprise under government regulation rather than a publicly owned and operated enterprise;
2. The principal of regulated competition which has prevailed since enactment of the Civil Aeronautics Act;
3. Keeping air transportation free from the control of all interests that "might have an incentive to obstruct its full development."

Ryan asserted that air transportation "must be recognized as a long distance transportation and it will probably continue to be so for a long time to come."

"It is a significant fact that today there is not a single airline operating in this country whose operations are confined to a single state. The duplicate and multiple regulation which would be involved in economic regulations by the 48 states would constitute a serious burden to the development of air commerce and air transportation."

Such a burden, he said, would have a detrimental effect "upon the public interest in that it would interfere with the efforts of the air carriers to reduce costs and develop a mass transportation market."

With respect to state and local taxes, Ryan said that these constituted burdens to the airlines and occur with respect to four kinds of taxes—those measured by property, by net worth, by gross receipts and by capital stock.

"Taxes on gross receipts are presently employed to only a limited extent. The tax rates involved in most of the capital stock levies are very moderate, the importance of multiple taxation as a burden on airline operations is largely confined to state net income taxes and to state and local property taxes."

"The amount of multiple taxes today, measured in either absolute or relative terms, gives a misleading impression of the possible future burdens from multiple taxation. The industry is new and has not yet met the full impact of state and local taxes that can be anticipated as it grows in size and matures. These taxes will inevitably be of increasing signif-

icance in the future. Under the circumstances, it is important to devise some means of eliminating the tax burdens that arise solely from diverse theories of tax jurisdiction."

Ryan said that aviation fuel taxes represent 35 to 40 percent of state and local taxes, and that they are therefore an important part of the airlines' tax problem.

"Certainly the location of fuel stops and operating procedures will be determined by tax considerations when the price of gasoline can vary as much as seven cents a gallon, depending upon where it is purchased. Fuel taxes might also have some effect upon the frequency of air service provided in high and low tax states."

With respect to national policy on aviation, Ryan declared that the "American policy is one of constructive and regulated competition; its objective has been to avoid destructive competition on the one hand and the commercial and technical stagnation of monopoly on the other."

He said that the reasons for legal brakes on the acquisition of control of airlines by surface carriers were made clear by Congress when it expressed belief "that this new form of transportation, so vital to the national welfare and the national security, could attain its full development only if its management and leadership were free from any conflicting loyalties and were wholeheartedly committed to the advancement of air transportation."



Bendix Turret — Shown in cut-away is a Bendix electrical power gun turret installed in a B-25 Mitchell. Protected by armor, the gunner sits on an adjustable seat with his head and shoulders between twin .50 caliber machine guns, which can be rotated in a full circle or swung in a 90 degree arc to repel attacks from upstair. Bendix Products Division has developed and produced more than 20,000 electric power-driven gun turrets since Pearl Harbor.

Four Minnesota Bills Aim To End Multiple Taxation

Four major bills were to be introduced in the Minnesota Legislature in an effort to end multiple taxation of airlines. This program was agreed upon the second week in February at a meeting of the members of the legislative committees of state organizations of the National Aeronautic Association and the National Aviation Trades Association.

Need for remedial legislation grows out of the Northwest Airlines case in which the U. S. Supreme Court upheld the state's right to tax the airline's equipment at full value despite the fact that the company's planes also were being taxed in other states.

A summary of the bills follows:

1. A revision of the existing aeronautics code, making it conform in every detail with the model acts of the National Association of State Aviation Officials and the revised zoning measure of the Civil Aeronautics Administrative and the National Institute of Municipal Law Officers.

2. A revenue measure, setting up a tax of not more than four cents a gallon on all aviation gasoline and, in lieu of all personal property tax, a registration fee for all aircraft of one and one-half cents of list price now, with a \$10 minimum. Airlines planes were exempted from the registration provisions of this bill and are taxed instead under a special formula which eliminates multiple levies. It provides for pro rata distribution of tax assessment among the states over which equipment is operated.

3. An appropriation bill to cover administrative costs of the Department of Aeronautics and enabling legislation to provide state funds to match Federal and local financing, with or without the issuance of revenue bonds. Revenues from gas taxes and registration fees would go directly to an airport fund to pay service charges and amortization of bonds.

4. A long range airport program for the state, dividing it into six geographic sections, specifying the number and size of airports to be constructed in each district and indicating the rate of construction. It also provides for speeding or slowing down the program, depending upon three factors; postwar economic conditions; amounts of revenue from gas taxes and registrations; and the extent of Federal assistance.

Craven Loses Voice, Then Injures Knee

Leslie Craven, New York attorney whose clientele includes several major airlines, has had a run of hard luck.

He suffered an attack of laryngitis during a recent CAB hearing, and lost his voice when the time came for oral argument in the important North Atlantic case. A postponement was granted to give him a chance to recover.

Following the argument, Craven took a short vacation in New England to recuperate. He returned to Washington last week, walking with a slight limp. During the New England trip he had fallen and wrenched his knee.

Merits of Coastal Route And Inland Course Argued

Northwest Favors St. Paul-to-Alaska At Pacific Hearing

THE PACIFIC hearing before the Civil Aeronautics Board, which opened in Washington last fortnight before Examiners Ross I. Newmann and Lawrence J. Koters, developed into a debate of the merits of the so-called inland route to Alaska and the Orient versus the historic coastal route via Seattle.

Northwest Airlines, which championed the inland route by its application from St. Paul-Minneapolis to Alaska, declared that this route would eventually transport more traffic than was ever developed over the coastal route in the past.

Pan American Airways took issue with position, asserting that the inland route is not necessary at this time. United Air Lines supported this view, declaring that Seattle will always remain the principal gateway to Alaska.

Both Northwest and Pan American were in agreement, however, on the fact that the northern Pacific route to the Orient will garner a majority of the traffic in this service. Both carriers estimated roughly 30,000 passengers annually on the northern route.

Another of the issues to develop early in the proceeding was the plea from Alaskan carriers that a Territorial operator be given preference over a domestic carrier in awarding a route between the U. S. and Alaska.

Four certificated Alaskan carriers—Alaska Coastal Airlines, Ellis Air Transport, Cordova Air Service, and Wien Alaska Airlines—expressed opposition to the applications of United, Western Air Lines, Transcontinental & Western Air, Prairie Airways, Pan American, Woodley Airways and Alaska Airlines.

John Wynn, attorney for the four protestants, said his clients did not oppose these or other applications which propose international routes which would not be dependent upon local traffic in Alaska for a portion of their revenues.

The need for additional air service to Alaska, which one witness characterized as the key to the Territory's future development, was voiced by a half dozen representatives of Alaskan communities at the opening of the hearing.

Witnesses for the Port of New York Authority voiced the warning that New York-Orient travel would be diverted to a British flag carrier unless the proposed transpacific routes are brought directly to New York.

James C. Buckley, the Port Authority's principal economist, said the proposed transpacific routes originating and terminating at Minneapolis-St. Paul would be "extremely unattractive" to passengers and cargo shippers because of the necessity of having to go through this intermediate clearance point before proceeding on to New York, or on to Alaska and the Orient.

E. P. Odenwalder, secretary of Alaska

Airlines, testified that within the next five or 10 years, Chicago would surpass Seattle as a gateway to Alaska. He said his predictions were based upon the fact that the distance to Alaska via Chicago is shorter and weather conditions are generally better.

Alaska Airlines gave the following breakdown for the first year of operations (1946) over its proposed routes: Between Seattle and Anchorage, 21,867 passengers would be carried with DC-3 equipment, with the operating showing a profit of \$342,887; between Chicago and Fairbanks, 4286 passengers would be carried with DC-3 equipment, with a profit of \$66,014; with DC-4 equipment, 28,365 passengers would be carried between Seattle and Anchorage, with a profit of \$72,880; and with DC-4 equipment, 8977 passengers would be carried between Chicago and Fairbanks with a profit of \$101,124.

Croil Hunter, president of Northwest, declared that the main issue in the hearing involved service to the Orient, and that the CAB in deciding which carrier shall be certificated to provide the service, must also decide national policy with respect to international air transportation.

Hunter testified that Northwest's proposed "over the top" route to the Orient would provide terminal-to-terminal competition for Pan American's central Pacific route.

He declared, however, that too much competition cannot be permitted on routes to Alaska, since such a move would weaken the structure of the transportation system serving Territorial points. On the other hand, he added, such transportation cannot be left in the hands of a single carrier.

Hunter asserted that both Pan American and United would abandon the northern inside route to Alaska and the Orient "to a foreign flag carrier" in an attempt to force all traffic through the Seattle gateway.

This statement was challenged by John T. Lorch, counsel for United, who moved that the remark be stricken from the record. Examiner Newmann allowed it to remain.

United estimated that it would carry more than 27,000 passengers annually between the U. S. and Alaska and return, with a load factor of 70 percent between Seattle and Ketchikan, and a 40 percent load factor for the over-all Alaskan operation. Passenger revenues were estimated at \$920,186 for the first year of operations, based on a fare of 52c per airplane mile.

This fare figure was challenged by Arthur G. Woodley, owner-operator of Woodley Airways, who testified that if "the applications of the Alaskan carriers in this case are denied, and the applications of any of the other carriers proposing five cent fares are granted, the government is certain to face the necessity of heavy subsidies to Alaskan carriers in order to permit them to continue their operations to and from remote points."

The question of competition was put squarely to Pan American when it began

Col. Arnold Returns To Eastern Air Lines

Col. Leslie P. Arnold, Commander of the 302nd Air Transport Wing of the Air Service Command which flew supplies to the U. S. invasion armies in Normandy, Holland and southern France, has been released at his own request to return to his position as assistant to Capt. Eddie Rick-enbacker, President and General Manager of Eastern Air Lines.



Col. Arnold

Colonel Arnold was awarded the Legion of Merit May 2, 1944 for "exceptionally meritorious conduct in the performance of outstanding services."

He served in France during World War I and remained in the air service after the Armistice. In 1924 Arnold was selected with five other pilots to take part in the first round-the-world flight of heavier-than-air aircraft. His plane was one of the two that made the trip safely.

presentation of its case, and some sharp questions were directed at its proposed fare structure in both the Alaskan and transpacific operations.

Harold M. Bixby, Pan American's vice president in charge of transoceanic operations in China and Alaska, was asked if Pan Am would give up its presently certificated route in the event the northern route were awarded to it. Bixby replied that he thought both routes were necessary.

He said that Pan American opposes competition over the northern route, not so much from the standpoint of company policy favoring monopoly, but because the route would not support more than one carrier.

Gerald P. O'Grady, counsel for Woodley, asked Bixby if Pan Am had set a definite date for the inauguration of its proposed fares, and the witness replied that these would depend upon the operation of larger equipment.

Pan Am proposed an average fare of 3.66c per mile, after round trip discounts, on the Orient route, and a sliding scale of fares ranging from 5.5 cents to 5 cents per mile on the Alaska route.

Bixby in response to further questioning said that Pan Am had operated at fares lower than those charged by the Alaskan operators, pointing out that these fares had averaged 10 cents a mile to "somewhat higher."

Law Heads Alaska Airlines

Theodore N. Law has been elected president of Alaska Airlines and Don H. Goodman made vice president. Law became interested in Alaska Airlines last year and has spent several months in the Territory. Goodman has been active in Alaskan operations since 1933. He was general manager of Star Airways, predecessor company of Alaska Airlines several years.

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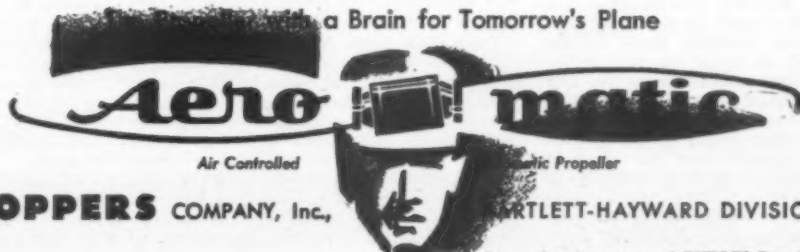
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Air Transport Impractical For 75-100 Mile Distances

United Survey Shows Present Setup Best For Longer Flights

DATA DEVELOPED by the Economic Research Department of United Air Lines indicates that the passenger market for air transport will be defined on the short side at minimum distances between 75 and 100 miles until plane design and therefore mode of operations change to permit the plane to compete more effectively at short distances with other transport media, according to Hal E. Nourse, assistant to the president of United.

In presenting the conclusions of the UAL survey, however, Nourse points out that none of the conclusions or generalizations should be construed or interpreted in exact or absolute manner, but are rather intended to convey probable limits or averages. Furthermore, the material is based on the acceptance of the plane and the art of flying and operation in its present or near future stage of development, and the only change which is foreseen which might change some of the conclusions reached is the development and use on a wide commercial scale of the helicopter.

Starting with a general analysis of short haul travel, Nourse shows that 90 percent or more of the trips taken by people living in towns of 10,000 population or under, and from 68 to more than 80 percent of those taken by people in towns or cities of over 10,000 are for distances under 100 miles. At the same time people from small towns travel very short distances, comparatively often, but travel less frequently than people from larger cities for distances more than 50 miles. However, a large proportion of these out of town trips are by private auto with the auto having its greatest importance on shorter trips and in smaller cities, and common carriers being used more for trips more than 50 miles in the larger cities.

Having thus shown the travel trends and the basic nature of the local or short haul travel market, Nourse turns to the factors which will determine the extent to which air travel can in the future compare favorably with other travel mediums in respect to certain fundamental requirements for local service, which he lists as (1) accessibility of service, (2) frequency of service, (3) speed of service, and (4) cost of service.

On the first of these points the United survey shows that air service provided from airport to airport is generally less accessible to the traveler than service afforded by rail or motor carriers or by private auto. Time consumed by the trip from city to airport at origin, at airport to city at destination has no equivalent in the use of other forms of transportation; and this constitutes an obstacle which can be overcome only partially as long as air travel is to and from airports located on the outskirts of cities. An analysis of driving time from the June

1944 American Aviation Traffic Guide shows that the average city to airport driving time ranges from 23 minutes for cities under 25,000 to 50 minutes for cities over 500,000.

In the matter of frequency of schedule, surface carriers, likewise will offer a competitive element to local air transport. An analysis of bus and rail schedules from 169 smaller West Coast cities within 50 miles of 29 certificated stations and 21 cities applied for by United in California, Oregon, Washington, Idaho and Utah to these certificated stations and cities applied for shows 26.3 round trip bus and 21.3 round trip rail schedules to those of 25,000-100,000, 22.9 and 11.0 to those of 10,000-25,000, 19.4 and 5.7 to those of 5,000-10,000, 11.8 and 2.7 to those of 2,500-5,000, and 7.9 and 1.9 to those under 2,500.

A similar analysis of bus and rail schedules from 131 smaller cities in Colorado, Wyoming, Idaho, Utah and Nevada to certificated airline stations shows 11.3 daily round trip bus and 7.1 rail schedules from cities of 10,000-20,000, 7.8 and 3.5 from those of 5,000-10,000, 5.3 and 2.5 from those of 2,500-5,000, 2.9 and 1.6 for those of 1,000-2,500, and 1.9 and .6 from those under 1,000.

Regarding air transport as a time-saver, the United studies show that if both flight and surface time between airports and city centers is given proper weight, the overall speed of air travel does not offer great advantage on non-stop distances up to 75 miles. An analysis of city to city speed with a Beechcraft 18-S including city to airport time for various trip lengths and conditions of operation shows that plane speed ranges from 27.3 to 49.2 miles per hour for a 50-mile trip as against 32 miles per hour for bus and 35 for auto. On a 75-mile trip the plane speed ranges from 32.6 to 65.2 as against 35 for the bus and 38 for the auto. For 100 miles the air range is 36.1 to 77.9 compared to 37 for the bus and 39 for the auto.

Finally, the United researchers conclude that if surface transportation costs between airports and city centers as well as air fares are given weight, local air transport also finds itself at a disadvantage in competing with rail, bus or private auto transportation on a cost basis. For example, an air fare of three cents a mile becomes five cents a mile for a 50-mile trip, 4.5 for 75 miles, four for 100, 3.7 for 150, 3.5 for 200 and 3.4 for 250 when two 50 cent fares for the trips between city and airport are added in. Comparatively rail costs range from 2.2 down to 2 cents, bus from 2.1 to 1.9, and private auto remains at a flat 1.8.

From these facts, Nourse concludes that air transport is not practical for distances under from 75 to 100 miles in the present state of plane development. But this does not mean, he says, that many smaller communities not now receiving airline service should not or will not be given service in the future, rather that such new service will be justified for the most part on the basis of need for air service to points beyond 75 to 100 miles distant.

New Allocations Give One DC-3 Each to PCA Northwest and Delta

The domestic airlines of the United States moved to within one plane of their all-time high equipment total Feb. 19, when the Surplus Property Board allocated three more Douglas DC-3s to domestic operators along with nine other transports to foreign air carriers and U.S. aircraft companies.

In 1941, the domestic airlines had a total of 359 planes. Allocation of one Douglass DC-3 each to Pennsylvania Central Airlines, Northwest Airlines, and Delta Air Corp. brought the U. S. domestic airline total to 358.

This was the sixth allocation of non-standard military type transport planes under Surplus Property procedures, under which 131 transport planes have been distributed—80 to U. S. companies and 51 to foreign operators.

Hawaiian Airlines, not ordinarily listed in the U. S. domestic fleet, received one Douglas DC-3, and one Lockheed Lodestar each went to Grumman Aircraft Engineering and to Northrop Aircraft.

In the foreign field, TACA Airways received three Douglas DC-3s and Royal Norwegian Air Transport three of the same type. One Lockheed 12, not classed as a transport plane, went to Armstrong Cork Co., of Lancaster, Pa., and another to Braniff Airways.

Panair do Brasil Clears Up Granting of Route

The award of the new 1800-mile route between Rio de Janeiro and Manaus to Panair do Brasil, Brazilian affiliate of Pan American Airways, was not a reversal of a previous decision to award the route to Aerovias Brasil, S. A., Brazilian affiliate of TACA, Paulo Sampaio, president of Panair do Brasil, said in a letter to American Aviation commenting on the news story in the Dec. 1 issue.

"This release states that the granting of the 1800 miles Rio-Manaus route to Aerovias Brasil, an affiliate of TACA, had been reversed at a later date, presumably by the President and the Air Ministry.

"This statement is entirely incorrect. Panair do Brasil was the only bidder to comply fully with the terms under which the proposed line was to be allocated and at no time was there any indecision regarding the outcome of this bid, nor any reversal of the original decision reached by the Air Ministry.

"The major terms under which the bids were to be considered were the following:

(a) A flat rate per kilometer should be quoted by the bidder.

(b) A flat rate covering the construction, maintenance and upkeep of five airports, should be included by the bidder.

"Panair do Brasil was the only company to comply with these terms having quoted Cr\$7.00 per kilometer for the subsidy and Cr\$6,556,000.00 for the construction of the airports.

All other bidders, including Aerovias Brasil, were disqualified in view of the fact that they had not met the terms and conditions stipulated in the official bid."

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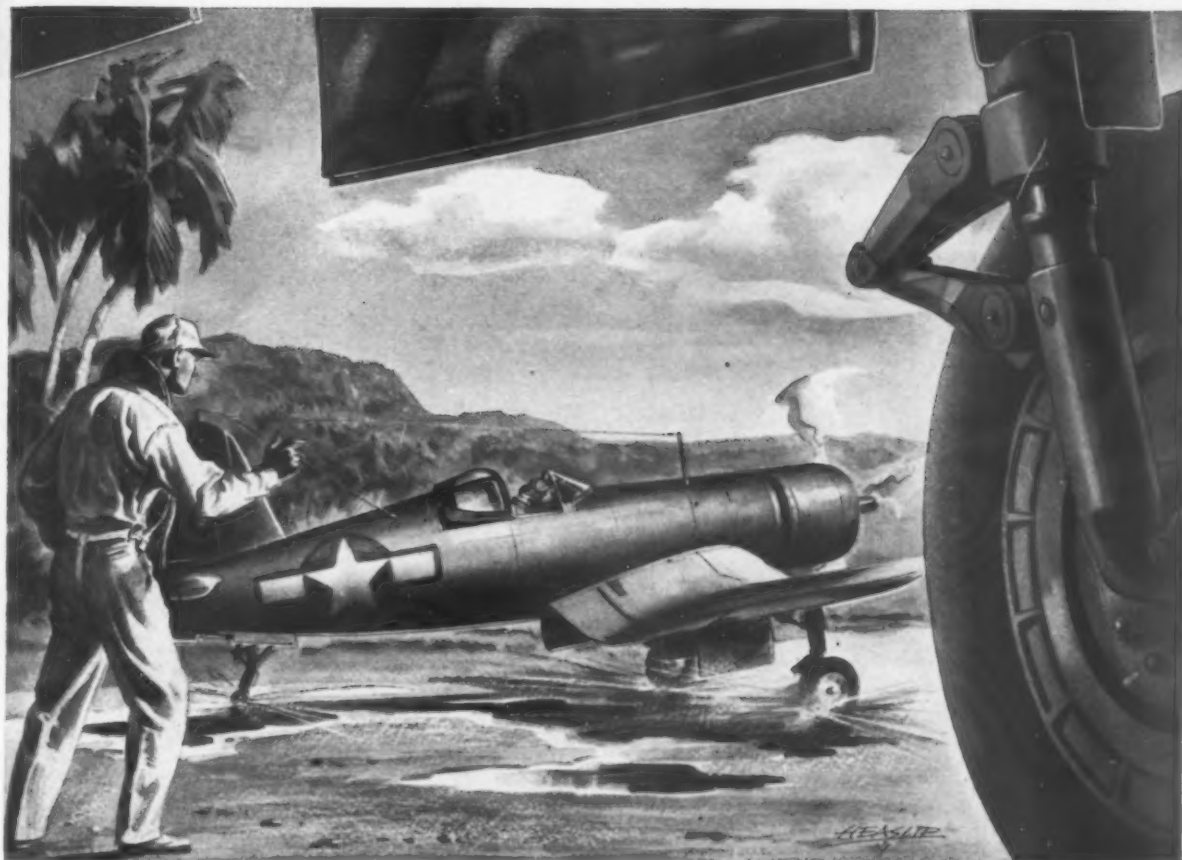
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Planes that CARRY their "landing strips"

Emergency landings on rain-soaked jungle runways are not infrequent in today's global warfare. Even on such tough terrain, AEROLS (Cleveland Pneumatic shock-absorbing landing gear) protect the plane and pilot by helping insure a safe, smooth landing. ♦ Today, AEROLS are contributing substantially to the efficiency of military planes; tomorrow, they will provide even greater comfort in the *age of flight*. ♦ Our products, serving many major industrial fields, are mentioned below. Whatever your needs, Cleveland Pneumatic Tool engineers offer you the benefit of over 50 years manufacturing experience.

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Speed Final Victory! Buy MORE War Bonds

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AEROL LANDING GEAR

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CLEVELAND PNEUMATIC TOOL



COLLINS 1000-C MULTI-CHANNEL TRANSMITTER

Smart engineering design halves the cost per channel

IN THIS 2500 watt, Collins engineering has struck an ingenious balance of quality, efficiency and economy.

The right hand cabinet contains two vertical rf sections. Through application of the principles of quick shift (less than 2 seconds) each section can be used interchangeably on two channels, such as may be called for by day and night transmission. These channels are not limited to the pass band of the rf circuits but may be located anywhere within the tuning range of the equipment— $\frac{1}{2}$ to 20 mc.

The cost per section is comparable to that of conventional single channel sections. The actual cost per channel is thus cut approximately in half.

In addition, relays permit selection of three crystals per channel (six per vertical section) spaced within 2% of the nominal center frequency. Twelve frequencies are therefore available in a single cabinet arranged as needed within the four channels.

In the equipment illustrated above, the left hand cabinet contains the af and modulator sections. The power supply cabinet is in the center. All sections are of highly advanced design, and are of the vertical chassis type.

We shall be glad to discuss applications of this rugged, versatile equipment to suit your operating requirements. Collins Radio Company, Cedar Rapids, Iowa.



Available: Additional af-modulator and rf multi-channel sections . . . Supplemental Collins Autotune rf section . . . Frequency shift keying . . . Complete remote control, built to your requirements.



IN RADIO COMMUNICATIONS, IT'S . . .

AMEX Seeks \$1,600,000 New York-Foynes Mail Pay

**Represents Cost of
\$4 a Pound or \$1.75
Per Revenue Mile**

AMERICAN EXPORT Airlines last fortnight asked the Civil Aeronautics Board for mail pay amounting to approximately \$1,600,000 annually to cover its commercial operations between New York and Foynes, Eire.

The request was presented at a hearing before Examiners William J. Madden and Charles Frederick. The hearing was adjourned until a later time after being in session for a day to allow AMEX to prepare further exhibits covering its experimental and developmental costs.

John E. Slater, executive vice president of AMEX, said the proposed mail pay represented a cost to the Government of less than \$4 a pound, or \$1.75 per revenue mile. He said the airline could not operate at a profit before mail pay under its present estimates of traffic.

Under questioning by Harry Bowen, public counsel, as to why the operation would not be in the black before mail pay, Slater said the cost of operations on the Vought-Sikorsky flying boats, which AMEX proposes to use, is higher than for land-type planes. A second factor, Slater said, was the company's inability to get additional aircraft.

AMEX plans for commercial operations call for two of the flying boats to begin the transatlantic flights, but Slater said the company wanted to secure DC-4s when they become available. He estimated that 24 passengers would be carried per round trip during 1945 operations with the flying boats.

It was AMEX's second appearance before the CAB for the determination of mail pay for its commercial operations. A similar proceeding was held in 1941 in which the CAB and the Post Office Department approved mail pay, but the appropriation was turned down in the Senate.

Slater pointed out that the Senate's adverse action had no immediate effect on AMEX, however, since the company was still awaiting delivery of planes from Vought-Sikorsky. The Navy acquired the planes upon their completion, and AMEX flew them under a Navy contract. The latter contract was terminated at the end of 1944.

Slater listed these four items as the base upon which AMEX estimated its requirements in mail pay: (1) amortization of a \$1,500,000 account for experimentation; (2) interest payable to American Export Lines, the steamship company, on a \$1,500,000 loan; (3) interest on borrowed capital for the purchase or rental of equipment for the commercial operation, and (4) a 10 percent return on the airline's net investment.

Bowen asked Slater what effect approval of the acquisition of AMEX by American Airlines would have on the former's needs for mail pay. Slater said this action would have no effect, since

AMEX under the acquisition would have a net worth of \$4,500,000, thus giving it the same basic figure upon which to base mail pay.

Slater estimated that AMEX would carry 6500 pounds of mail per round trip between New York and Foynes in the summer, and 3600 pounds per round trip between the same two points in winter.

W. F. English Chosen Vice President of TCA

W. F. English has been appointed vice president in charge of operations of Trans-Canada Air Lines.



English

English, who has been assistant vice president since Oct., 1941, succeeds O. T. Larson who has rejoined United Air Lines after serving TCA since 1937.

English joined the staff of the Canadian Northern Railway, now part of the Canadian National System in the vice president's office in 1908.

With the inauguration of TCA in 1937 English joined that organization.

600 Planes in Canadian Domestic Use Forecast

Future expansion of air service for passengers, mail and freight in Canada can be expected to develop along four lines, R. B. C. Noorduyn, president of Air Industries & Transport Association, told members of the Board of Trade in Toronto. These are: (1) multiplication of present transcontinental facilities with two probable classes of service—high speed overall with fewer stops than at present, and intermediate service with more frequent trips not necessarily limited to one route or the most direct route; (2) multiplication of north and south routes and institution of new services to areas brought under development; (3) establishment of feeder lines and inter-city routes; (4) extension of air mail service by means of pick-up and delivery in flight.

Noorduyn predicted that eventually 600 planes would be required for all domestic services, 300 on main routes, and 300 for inter-city and feeder lines. He added this would call for an annual replacement of 120 planes per year of all types. He expressed the opinion that the Canadian industry is equipped to build planes of any type, size and construction in peacetime, but warned that the future of the industry depends in large measure on policies formulated and implemented by the government in power.

Eastern Will File Competitive Fares To Match American

Eastern Air Lines has instructed M. F. Redfern, secretary of the Air Traffic Conference, to file an application with the Civil Aeronautics Board for authority to publish passenger fares competitive with American Airlines between New York, Boston, Philadelphia, Baltimore, Washington and Brownsville, Tex.

American announced a six and a half percent reduction in its passenger fares effective March 10. Eastern's competitive tariffs would be effective the same date.

It was understood that Pan American Airways had applied to the CAB to institute a similar competitive fare between Brownsville and Mexico City, thus allowing the combination of the two carriers to meet American's fare from principal U. S. cities to Mexico City on a proportional rate.

Pennsylvania-Central Airlines also has notified the CAB that it will compete with American's fares through reductions in local fares between competitive points.

Chicago and Southern Air Lines is also understood to have filed an application with the CAB to meet American's competitive fares between Chicago and St. Louis and between Memphis and Little Rock.

Eastern To Put Discount Into Effect On March 25

Eastern Air Lines last fortnight announced a five percent discount on passenger fares to holders of air travel cards for transportation over the carrier's system. The discount will be effective March 25. A five percent discount also will be made for all Government transportation over Eastern's system.

Eastern was the fourth of the major carriers to announce fare reduction or discounts.

American Airlines has announced a six and a half percent reduction on its on-line fares without discount, and United Air Lines proposes a 10 percent reduction in passenger fares plus a five percent discount to travel card holders and government travel on round trip fares. TWA proposed a five percent discount on passenger fares to holders of air travel cards.

National Airlines and Northwest Airlines have filed revised passenger tariffs calling for discount reductions effective March 25.

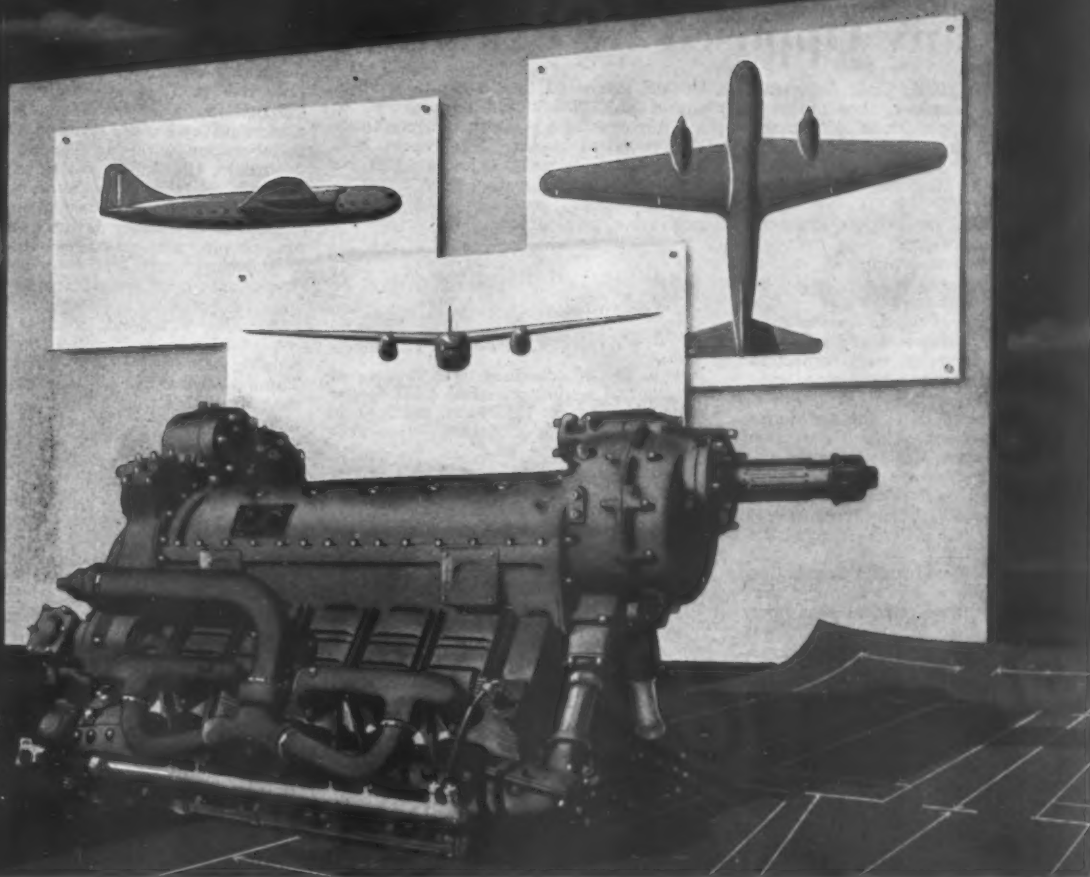
National proposes a five percent discount on air travel cards and a five percent discount on Government travel orders. Northwest proposes a five percent discount from regular one-way fares to holders of air travel cards purchasing transportation on the carrier's system. The same discount would be allowed for Government travel.

SAE Cross-Index

The Society of Automotive Engineers has completed for use of the air forces of the United Nations a comprehensive cross-index of original, interchangeable and substitute aeronautical materials used in aircraft, engines and accessories.

—American Aviation for March 1, 1945

THE TOUCH OF TOMORROW IN THE PLANES OF TODAY



INLINE FOR THE AIRLINES

Here in this clean, compact package is power for the airplanes of tomorrow—airplanes that will knit together the world's growing network of airways.

Latest in production of a long line of Ranger engines, the Ranger Twelve is ready to take its place as the efficient power plant for feeder line transports of the new air age.

Constantly improved since its inception, Ranger Twelve is backed by fifteen years of Fairchild experience in building aircraft engines. Its dependability is assured by Fairchild precision construction and a

heritage of careful research and engineering skill.

Inline, aircooled, inverted; one of the few truly highspeed aircraft engines in existence, the Ranger Twelve delivers *smooth* power. The simplicity of its design can sharply reduce the airline operators' inspection and maintenance expense.

Within its design, too, lies a promise . . . a promise for even greater efficiency and sleekness in new Rangers to come through that quality built into all Fairchild products, "the touch of tomorrow in the planes of today."



A I R C R A F T E N G I N E S

Division of Fairchild Engine and Airplane Corporation • Farmingdale, Long Island

BUY U. S. WAR BONDS AND STAMPS

Braniff Acquisition of Mexican Company Opposed by Examiner

WILLIAM F. CUSICK, Civil Aeronautics Board examiner, has recommended that the applications of Braniff Airways and T. E. Braniff for approval of the acquisition of control of Aerovias Braniff, S. A., a Mexican corporation, should be denied.

"It is apparent that the Board's approval would in effect sanction a large network of foreign routes concerning which, as the evidence shows, much more should be known," the report stated.

"That such approval would be violative of the joint policy statement of the Board and the State Department with respect to new international routes seems quite evident."

The report held that the evidence "clearly demonstrates that the transaction (acquisition) involves simply a route extension of Braniff Airways into the Latin American field of operations and should properly be brought under sections 401 and 801 of the Act (Civil Aeronautics Act.)"

With respect to Mr. Braniff's acquisition of Aerovias Braniff, it was contended that the CAB had no jurisdiction to pass upon this question because Mr. Braniff did not control Braniff Airways. "However, on the basis of the facts, a contrary conclusion has been reached," the report states. "Accordingly, all of the considerations, with the exception of the possible harmful financial effect on the domestic carrier, leading to the conclusion that the acquisition by Braniff Airways should be denied, apply with equal vigor to the application of Mr. Braniff."

The report held that concessions granted Aerovias Braniff by the Mexican Government were of a temporary nature of six months' duration, after which applications for permanent operating permits would have to be made.

"This indefiniteness as to what concessions, if any, Aerovias will hold after the trial period of six months seriously weakens Braniff Airways' entire position in this proceeding, and brings into sharp focus the question of whether the public interest will be served because of the large expenditures necessary by the domestic carrier if the acquisition is approved," the report states.

"Evidence with respect to the routes of Aerovias and the operation thereof is equally vague," the report continues. "It was admitted at the hearing that a number of routes are not considered profitable, at least from a present operational viewpoint, and in fact it is not contemplated to begin service over the entire system but to gradually expand the service as conditions seem to warrant."

"Testimony relating to the capital investment necessary to instill life into Aerovias as a functioning air carrier is considerably below the standards required to adjudge the full impact this proposed acquisition would have on the future financial stability of Braniff Airways. The Board owes its first duty to protecting the present certificated domestic operations of Braniff Airways, and any doubt that such operations might possibly be weakened to a significant extent as proposed herein through an investment the size of which is now uncertain must be resolved against the acquisition."

Braniff estimated that a capital investment of \$1,200,637 would be required to place Aerovias in a position to serve three of its proposed routes. The report held that this estimate was too low since it did not take into consideration such items as working capital, attorneys fees, airport construction, and personnel training.

Frequency of Flights Described As Selling Points Of Feeder Lines

Frequency of schedules will be one of the principal selling points of local-feeder airline systems, R. C. Bowen testified in the Texas-Oklahoma hearing in Fort Worth last fortnight.

Bowen, who recently sold his Texas bus system for \$2,500,000 with the announced intention of engaging in the feeder airline business, was among the last of the applicants to be heard before Examiner Thomas L. Wrenn.

The former bus operator expressed belief that the 15,000-mile system he originally applied for was "too unwieldy to operate" and asked that the CAB certificate him for a 3000-mile system covering the most populated sections of Texas.

The hearing in its final stages moved along on comparatively smooth waters after hitting some snags in the controversy between the so-called independent feeder applicants and the Braniff trade area feeder system.

Houston Airways was the last of the five Braniff-sponsored systems heard. It proposed operations in the Houston trade territory with Lockheed Saturns.

Robert F. Six, president of Continental Air Lines testified that his company is not opposed to feeder lines operating between major terminals, provided they make sufficient intermediate stops.

Six expressed opposition to Braniff's trade area plan, asserting that "it is not sound public policy to permit the creation of an organization on paper, lacking in aeronautical experience, merely for the purpose of making application for a franchise, then to sell stock to the public under the guidance of an existing large carrier such as Braniff." He maintained that Braniff was without authority under the Civil Aeronautics to engage in such organizational activities.

Hannaford Air Lines ran into some stiff opposition from Braniff in its proposal for service between Ft. Worth-Dallas and Houston and San Antonio. Braniff maintained that no grounds for need had been shown for the service.

A change in the corporate structure of Aviation Enterprises, which sought 729 miles of feeder routes, slowed up the hearing at another point. The company originally was a partnership, but announced that it now is a corporation.

Among the corporation's officers were James V. Allred, former governor of Texas, vice president; P. M. Stevenson, secretary-treasurer, and J. M. West, Houston capitalist, vice president.

It was brought out that Stevenson, an attorney, was handling some of West's interests. It was also disclosed that West is interested in West Central Airlines, another feeder applicant in the case.

Army Food Unit Points Way to Better Meals

Pointing the way to better meals for postwar commercial air travelers is the new B-2 food warmer unit recently developed by the Air Technical Service Command and other army technicians in collaboration with the Tappan Stove Co., Mansfield, Ohio; and now in use on Army aircraft ranging from Superfortresses to C-54's used as ambulance planes.

Each B-2 warmer is designed to serve six people, yet measures only 16x11 $\frac{3}{4}$ x 14 $\frac{1}{2}$ inches and weighs only 30 pounds. There are three compartments, one holding six four-section trays for meat and vegetables, a second holding 12 covered cups for soup and coffee, and the third holding silverware and cake or bread. The first two units are kept at a temperature of 160° F. by a heating unit which operates on either 110 volts or the 24 volt aircraft system. Trays and cups are of stainless steel and the latter have plastic lids secured by spring clips and small screw-capped openings through which the contents may be sipped through a straw when flight conditions make it impossible to drink directly from the cup.

The principal difference between the new Army units and those now used by the airline is that with the former the hot food is loaded directly into the warmer at the airport kitchen and kept hot until the plane is ready to leave, then moved to the plane and plugged into its circuit; whereas the transport unit is a permanent installation used to reheat food carried into the plane in separate containers. For transport use, the small size of the B-2 unit would make it possible to locate several units at different points, and even offer semi-cafeteria service with each unit serving certain seats.



Dinner For Six—This compact army-developed food warmer takes up barely one and one-half cubic feet of space, yet contains complete hot meals for six. The cups have small screw-capped openings in the plastic lids to permit use with a straw when the weather is too rough to permit drinking directly.

Wiggins Acquires Airport

E. W. Wiggins Airways, Inc. announces that it has taken over Barnes Municipal Airport, Westfield, Mass., for commercial operations and to manage the airport. The company will conduct flight training, charter flights, aircraft and engine overhaul and repairs.



Press Association, Inc.



Beginning of the End -- of Tokyo

November 23, 1944, a fleet of B-29's lifted itself off the runways of Saipan—first raid of these sky-giants against the Japanese capital . . . a combination of men, machines, and determination that is being, and will be, repeated with increasing size and intensity.

In the spring of 1942, Doolittle's planes averaged 30 seconds over Tokyo. Two and a half years later, the world's mightiest bombers loomed high over the "sacred city", pin-pointed their targets, unloaded tons of bombs, and were away after more than 30 minutes over the city.

This was a light raid — comparatively. Others followed it. Day by day B-29 strength in the Pacific is building up with a slow but steady crescendo. More planes, more bombs, more flights, more destruction.

Boeing has done a masterful job in designing and building these ships . . . as has Wright in the mighty

engines that get them there *and back*. And numbered among the thousands of vital parts that go into these great Wright engines are CECO carburetors.

Chandler-Evans is proud of this opportunity to pay tribute to all those men and women who have a part in the success of these superb bombers . . . and is proud that the dependability and quality of its carburetors is such that they have been chosen to do their part, however small, in making it the beginning of the end — for Tokyo.

CARBURETORS

FUEL PUMPS

PROTEK-PLUGS

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PCA, Eastern and All American Seek to Serve Additional Points

APPPLICATIONS by certificated carriers seeking to add additional points to their present routes and to extend those routes highlighted developments in the Civil Aeronautics Board's Docket Section during the fortnight.

Pennsylvania-Central Airlines filed eight applications for additional points and extensions of its routes in the Virginia-Tennessee-North Carolina area. An application covering the same general territory was filed by Eastern Air Lines. All American Aviation applied for 23 pickup routes in the Great Lakes area.

Approval of interlocking relationships was sought in applications filed by both certificated and non-certificated applicants. Following are the applications:

All American Aviation

This carrier has applied for 23 pickup routes in the Great Lakes area serving points in Michigan, Illinois, Indiana and Ohio.

Following are the terminals: Columbus to Pittsburgh, via 29 points; Cincinnati to Pittsburgh, via 24 points; Cleveland to Ft. Wayne, via 14 points; Columbus to Ft. Wayne, via eight points; Columbus to Indianapolis, via 10 points; Detroit to Dayton, via 13 points; Chicago to Indianapolis, via 17 points; Cincinnati to Indianapolis via seven points; Indianapolis, Ind. to Louisville, Ky. via the six intermediate points; Indianapolis to Evansville via eight points; Indianapolis to Evansville via 11 points; Chicago to Indianapolis via 16 points; Evansville to St. Louis via 13 points; Evansville to St. Louis via seven points; Terre Haute to St. Louis via 10 points; Chicago to St. Louis via 14 points; St. Louis to Moline via 15 points; Chicago to Muskegon via 10 points; Chicago to Detroit via 19 points; Chicago to Dayton via 17 points; Chicago to Moline via 13 points; Chicago to Moline via 14 points; Detroit to Muskegon via 19 points.

American Airlines

This carrier has filed an application seeking to amend its certificate on Route 30 to extend it from Chicago to Detroit. American also asks an amendment or order by the Board to permit non-stop operations between Detroit and St. Louis. The Chicago-Detroit portion represents a 247-mile extension to Route 30. (Docket 1744).

Alaska Airlines

This carrier, Mid-Continent Airlines and Theodore N. Law of Tulsa, have filed applications asking approval of an interlocking relationship for Law to serve as a director of both carriers. He has been a director of Mid-Continent since Jan., 1940, and was elected to the board of directors of Alaska Aug. 15, 1944.

Law is listed as the president and controlling stockholder of Falcon Seaboard Drilling Co., Tulsa. The application states that "the person primarily responsible for his election to the board of Alaska Airlines was R. W. Marshall, controlling stockholder."

The applications state that Law owns 250,000 shares of four percent convertible preferred stock of Alaska, the total authorized and issued of this class. This represents 66 percent of Alaska's preferred stock of all classes. (Dockets 1742, 1743).

Eastern Air Lines

This carrier has filed an application in which it reapplies for all routes sought in the Great Lakes to Florida proceeding (Dockets 569, 570, 1202) in addition to the following:

An amendment to its certificate on Route 10 to include service to Knoxville, Asheville, Greenville, Spartanburg and Columbia, Sav-

annah, and Brunswick, so as to permit dual routing between Jacksonville and Louisville; an amendment to Route 10 to include Savannah and Brunswick, so as to give these cities direct one-carrier service through Macon and Atlanta all the way to and from Chicago and St. Louis:

Amend its certificate on Route 47, extending it east from Charleston, W. Va., to Norfolk, via Roanoke, Lynchburg and Richmond, Va.; amend Route 5 to include Pensacola and Dothan, Ga., between Mobile and Columbus, and include Anniston-Gadsden as a point between Atlanta and Birmingham; amend Route 40 to include Columbus, Ga., between Atlanta and Albany, permitting direct service south from Columbus through Albany, Tallahassee and Tampa to Miami. (Docket 1728).

Pennsylvania-Central Airlines

This carrier has filed eight applications outlining proposals for extending its routes in the general area between Washington and Jacksonville, and to obtain intermediate points on its certificated routes south of Washington.

A resume of the applications follows:

To include Winston-Salem as an intermediate point on Route 51, between Raleigh and Asheville. (Docket 1730).

To extend Route 55 from Bristol, Va.-Tenn., to Atlanta via Asheville. (Docket 1731).

To include Charlotte, as a point on Route 51, between Greensboro and Asheville. (Docket 1732).

To include Richmond as a point on Route 14, between Washington and Norfolk. (Docket 1733).

To extend its routes from Washington to Memphis, via eight alternates, including an extension of Route 51 from Raleigh to Washington, via Richmond, and from Knoxville to Memphis, via Nashville. (Docket 1734).

To extend its routes from Bristol, Va. Tenn., to Jacksonville, and from Charleston, W. Va., to Jacksonville. (Docket 1735).

To extend its routes to Atlanta from Washington via four alternate routings, including an extension of Route 51 from Asheville to Atlanta, and extending the route from Raleigh to Washington via Richmond. (Docket 1736).

To extend its routes from Washington to Jacksonville via two alternate routings. (Docket 1737).

Transcontinental & Western Air

This carrier and Charles W. Perelle has filed an application for approval of an interlocking relationship to permit Perelle to serve on TWA's board of directors while serving as a director and vice president of Hughes Tool Co. of Houston. The application showed that as of Dec. 31, 1944, it had outstanding 975,586 shares of capital stock at a par value of \$5 each. Hughes Tool held 440,050 of these shares. (Docket 1739).

TWA also has filed an application seeking amendments to its present certificates on Routes 36 and 61 to consolidate them into a single route between Chicago and Washington via South Bend, Ft. Wayne, Dayton, Columbus, Wheeling and Morgantown. Route 61 now runs between Chicago and Dayton, and Route 36 from Dayton to Washington. (Docket 1740).

United Air Lines

This carrier has filed an application to add Indianapolis and St. Louis as intermediate points to Route 1 between New York and Portland-Seattle. The application asks authority to operate certain transcontinental flights to St. Louis and Indianapolis from Cleveland and Omaha. (Docket 1749).

Aeronaves de Mexico, S. A.

This Mexican operator of Balderas 44, Mexico, D. F., has applied for a temporary foreign air carrier permit to operate flights into and

out of the airport of Nogales, Ariz., with Boeing 247 or Douglas C-39 equipment on flights to and from Hermosillo.

The Mexican carrier, 40 percent of the capital stock of which is held by Pan American Airways, states that it holds a permit to operate for an indefinite period between Hermosillo and Nogales, Sonora. The airport at the latter border point is inadequate for the multi-engine equipment proposed for use on the run, the application states.

Aeronaves also operates two routes between Mazatlan and Hermosillo, and routes between Mexico City and Acapulco, Mexico City and Nautla, Urupant and Acapulco, Oaxaca and Acapulco, and a circular route out of Oaxaca.

Cargo Airlines

This company, of 1912 Sunderland Place, N.W., Washington, has filed an application proposing a world-wide system of air routes to be operated with lighter-than-air ships. The application states that a certificate for the carriage of property only will be accepted in the event of opposition by other carriers to Cargo's having a mail certificate. The application also requests permission to follow routes "commensurate with global meteorological conditions," and that the operator be permitted to follow "that route which will be in keeping with weather conditions forecasted for each flight."

The four routes proposed are: Lakehurst to Moskva, Russia, via the Azores, Paris, and Frankfurt, Germany; Lakehurst to Capetown, Union of South Africa, via the Azores, Free-town, Sierra Leon and Cabinda, Portuguese West Africa; Sunnyvale, Cal. to Manila, via Dutch Harbor, Vladivostok and Shanghai; Sunnyvale to Sydney, Australia, via Honolulu, Pago Pago, Island of Tutuila and Suva, Fiji Islands. (Docket 1741).

Maj. James B. Maquire, Jr.

This individual of 311 Summit Ave., Jenkintown, Pa., has filed an application for four routes over which he proposes local, short-haul service with Lockheed Saturn or Beechcraft 18S planes. The routes and their terminals: Philadelphia-Savannah, via nine points; Philadelphia-Warren, Pa., via two points; Philadelphia-Sayre, Pa., via two points, and Philadelphia-Atlantic City. (Docket 1729).

Maryland Airlines

This company of Easton, Md., has filed an application for five routes over which it proposes a non-scheduled operation for the transportation of passengers and property. It proposes to use both single and multi-engine equipment.

All of the routes sought are loops originating and terminating at Easton. They would serve (1) Annapolis and Washington; (2) Chestertown and Baltimore; (3) Chestertown and Wilmington; (4) Salisbury and Ocean City, and (5) Rehoboth Beach, Md. (Docket 1746).

Mandel Brothers

This company of 1 N. State Street, Chicago, Ill., has filed an application proposing service with both conventional aircraft and helicopters over seven routes in Illinois, Wisconsin, Indiana and New York.

Routes proposed are Chicago-Milwaukee, via three points; Chicago-Elkhorn, Wis., via five points; Chicago-Rockford, Ill., via five points; Chicago-LaSalle, Ill., via three points; Chicago-Waukegan, Ill., via one point; Chicago-Elkhart, Ind., via three points, and Chicago-New York direct. (Docket 1748).

Southeastern Air Express

This company of Atlanta has filed an application for approval of interlocking relationships for the following officials of the company:

Wesley N. Raymond, president, to serve as a partner of Raymond-Richardson Aviation Co.; E. Cody Laird, vice president and director, to serve as president and director of Southeastern Air Service; Robert R. Richardson, director, to serve as director-partner of Raymond-Richard-

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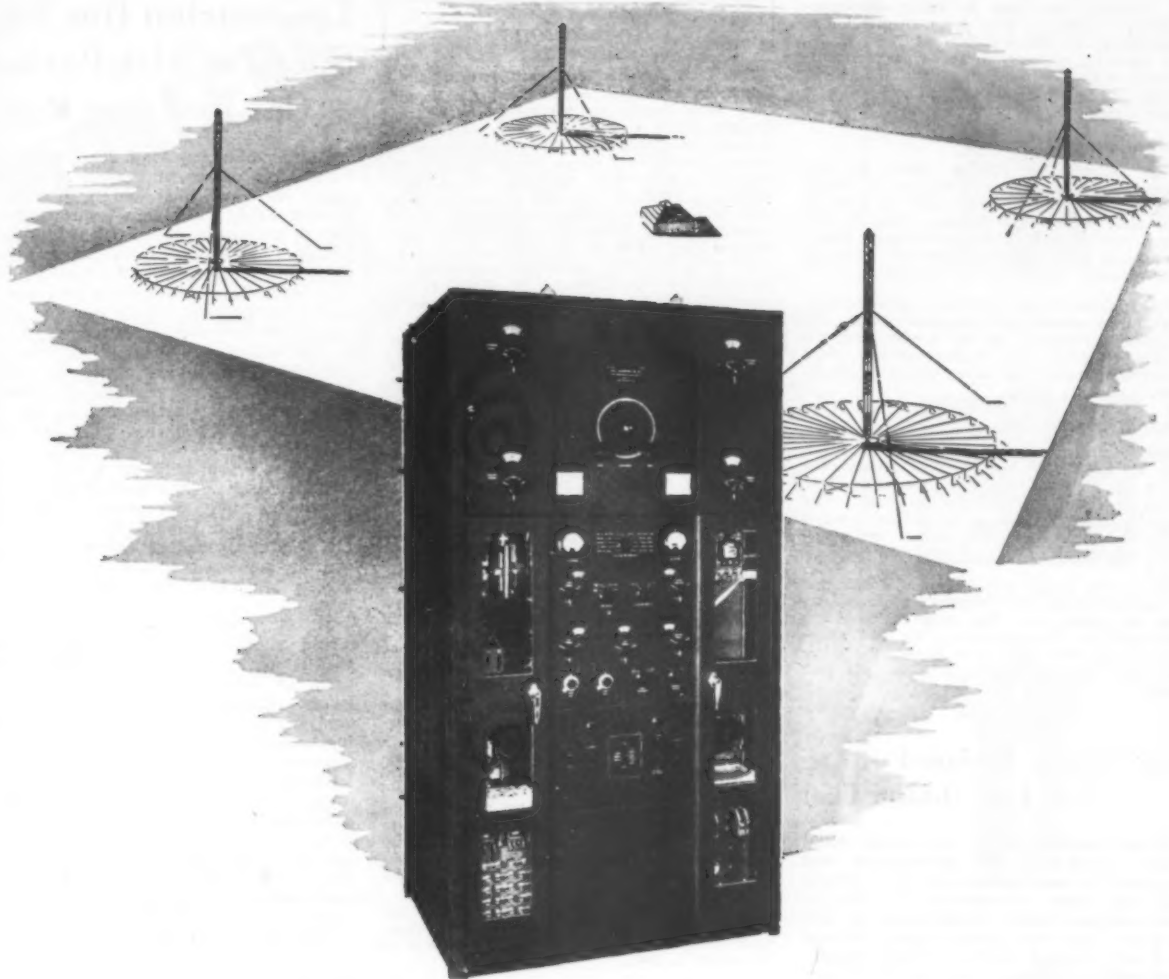
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son Aviation Co.; Ben T. Smith, treasurer-director, to serve as vice president-director of Southeastern Air Service; Edward T. Swift, Jr., vice president-director, to serve as president-director of Columbus Airways, and William H. Young, Jr., secretary-director, to serve as secretary director of Columbus Airways.

System Freight Service

This company, of 1005 S. Mateo St., Los Angeles, has filed an application for the transportation of property and mail between El Paso and Seattle, via Tucson, Phoenix and Yuma; San Diego, Los Angeles, Fresno, Sacramento, and San Francisco; Medford, Roseburg and Portland; Vancouver and Tacoma.

The applicant now operates a motor carrier service over substantially the same routes, and proposes to integrate the air service with the trucking business. Door to door delivery would be provided under the same general management. (Docket 1750).

Virginia Stage Lines

This company, of Charlottesville, Va., has filed an application seeking five routes over which it proposes daily service with both helicopter and conventional aircraft. The company now operates a bus system over a substantial portion of the routes for which it has applied.

The routes sought are between Washington and Ashville, via two alternate routings—one with 12 points, and the other with seven; Washington to Winston-Salem, via two alternate routes—one with three points, the other with four; Norfolk to Staunton, Va., via four points.

New Engine Designed For Low Octane Fuel

A new seven-cylinder air-cooled radial engine developing 700 horsepower and designed to use inexpensive low octane fuel has been announced by Wright Aeronautical Corp. Designated as the Cyclone 7, the new power plant is offered as a unit around which airplane manufacturers may design military short haul cargo planes and advanced trainers.

For postwar commercial feeder transports the low octane factor should provide considerable savings in fuel cost, an important item considering that fuel costs now account for 12 percent of air transport operating expenses.

The Cyclone 7 bears close resemblance to the nine-cylinder Cyclone 9, and many parts are interchangeable between the two. Salient construction features include forged cylinder heads, longer valve guides, greater cooling fin area in the vicinity of exhaust valve guide bosses and a self aligning exhaust valve seat. Cylinder barrels incorporate aluminum fins for improved cooling.

Longer valve life and reduced cylinder maintenance are made possible by use of a series of external oil tubes to increase the lubrication of the valves. To improve lubrication within the engine, oil jets have been provided in the crankcase to direct a continuous flow of oil into each cylinder barrel.

The Cyclone 7 is provided with a two-speed supercharger drive, the higher ratio—8.886:1—being adequate for development of maximum engine power at high altitude airports and the lower—7.208:1—being recommended for extra power for high performance at low altitude airports.

Regulations

The Civil Aeronautics Board has set up a temporary exemption of the Civil Air Regulations with respect to air carrier plane rear position lights to permit further experiments. A recent development in this field has been the use of lights having ratings of 140 degrees light and 40 degrees dark, utilizing the alternate flashing system. The system is cheaper to install and produces more satisfactory signals than those used heretofore. The flashing lights are not now required on non-carrier aircraft, but the CAB hopes to make the regulation all-inclusive for the industry if a satisfactory system is developed. The present experiments will continue until July 1.

Amendment 60-1.

68.71 *Acrobatic while carrying persons.* No person shall acrobatically fly an aircraft while carrying: (a) any other person or persons for hire, or (b) any other person seated at operative dual controls who is not the holder of at least a private pilot certificate:

Provided, That these provisions do not apply to the giving of instruction in acrobatic flying by a rated instructor.

Amendment 60-2.

60.973 *Acceptable explosives and other dangerous articles.* Civil aircraft may be operated in flight carrying acceptable explosives and other dangerous articles as follows:

(a) "acceptable explosives" designated in part 5, § 654, of the Interstate Commerce Commission Regulations;

(b) "acceptable articles" designated in part 6, § 703, of the Interstate Commerce Commission Regulations;

(c) samples of lacquers, paints, and varnishes, having a flash point between 20° and 80° Fahrenheit, in quantities, not exceeding one pint, when packed in friction-top cans, the tops to be soldered or fastened by indentations in not less than six places, cans to be surrounded with sawdust or other material in sufficient quantity to absorb all of the liquid, and packed in substantial fibre boxes;

(d) inflammable motion picture film when packed in accordance with the Interstate Commerce Commission Regulations, as amended to December 1, 1944.

Amendment 60-3.

Effective December 15, 1944, Part 60 of the Civil Air Regulations is amended by striking §§ 60.95 to 60.953, inclusive, and inserting in lieu thereof the following:

60.95 *Emergency regulations*

60.950 *Definitions.* As used in this section (60.95):

(a) The term "aircraft" means all aircraft other than those operated by scheduled air carriers, the United States Army or Navy, the Civil Aeronautics Administration, or the Civil Aeronautics Board.

(b) A "designated landing area" is an area designated by the Administrator as a regular base of operations for aircraft during the period of national emergency.

(c) A "local flying area" is an area in the vicinity of a designated landing area, including any channel leading thereto, recorded by the Administrator after coordination with all local interests, and with the defense commander if within a vital defense area, for non-exclusive use of local aircraft operations emanating from that designated landing area.

(d) A "vital defense area" is an area set aside by competent military authority within which the operation of aircraft is prohibited or is authorized only subject to prescribed conditions.

60.951 *Flight rules.* (a) Aircraft shall be based only at designated landing areas.

Note: An aircraft is not prohibited from making an occasional take-off and landing from areas other than designated landing areas outside vital defense areas. This does not apply to military airfields, use of which by civil aircraft requires specific authorization by appropriate military authorities.

Lancastrian Has Top Speed of 310; Payload Cut by Long Range

The Avro Lancastrian, long range mail, freight and passenger version of the Lancaster bomber which will be used in the Qantas BOAC England-Australia service has a maximum speed with full supercharge and 53,000 pounds gross weight of 310 miles per hour at 12,000 feet, according to specifications which have just been released in London. With medium supercharge at 3500 feet, the maximum speed is 295 miles per hour. At the same weight, maximum weak mixture cruising speed is 275 miles per hour at 11,000 feet with medium supercharge and 285 miles per hour at 17,500 feet with full supercharge.

Designed primarily as a mail carrier, the Lancastrian has provisions for nine passengers and 1572 pounds of mail or freight in addition to its crew of five, giving it a payload of 3597 pounds, which can be increased to 4845 pounds by reducing total fuel from 3174 to 2999 gallons.

This surprisingly small payload for such a big plane—its design gross weight is 65,000 pounds—can be attributed primarily to demands for exceedingly long range. Using 3174 gallons of fuel and carrying a 3597 pound payload at 15,000 feet under still air conditions with no allowance for takeoff and climb, its range is 4,150 miles at an average speed of 200 miles per hour and an average fuel consumption of 152 gallons per hour; 3950 miles at an average speed of 232 miles per hour and an average fuel consumption of 186 gallons per hour; and 3570 miles at an average speed of 265 miles per hour and an average fuel consumption of 236 gallons per hour.

Other performance data includes a 750 feet per minute rate of climb at 65,000 pounds gross and with medium supercharge from sea level to 9500 feet, and a 550 feet per minute rate of climb at 16,000 feet with full supercharge. Service ceiling is 23,000 feet. Take-off is 800 yards at 65,000 pounds gross in still air with no obstructions, and 1200 yards over a 50-foot screen.

The weight breakdown of the Lancastrian is: weight empty, 30,426 pounds; weight with fixed and removable equipment, 34,586 pounds; weight with equipment and furnishings, 36,150 pounds; and design gross weight, 65,000 pounds.

The plane is powered by four Rolls Royce Merlin engines suitable for temperate and tropical operation. It has an overall length of 76 feet 10 inches, an overall height of 19 feet 6 inches, and a wing span of 102 feet. The gross wing area is 1297 square feet, and the wing loading 50.1 pounds per square foot.

(b) No person shall pilot an aircraft within a vital defense area unless the flight has been approved by the responsible defense command or by the agency to which authority has been delegated for such approval: *Provided*, That approval is not required for flights from designated landing areas confined to the local flying area.

60.952 *Cancellation of designation.* The Administrator may, at any time, cancel the designation of a landing area if it is determined such action is necessary to public safety or to prevent conflict with military operations.

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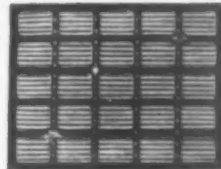
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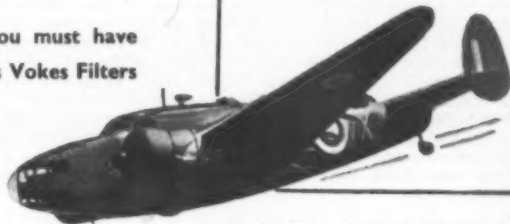
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CAB Orders Affecting Air Carriers

- 3438—Dismissing application of Texas Airlines (Docket 972).
- 3439—Dismissing application of Duncan Air Transport (Docket 1014).
- 3440—Extending temporary foreign air carrier permit of Aero Transportes, S. A.
- 3441—Extending temporary foreign air carrier permit of Lineas Aereas Mexicanas, S. A.
- 3442—Granting temporary exemption to Pan American Airways to operate transatlantic flights from the Patuxent River at Cedar Point, Md.
- 3443—Granting temporary exemption to Pan American Airways to operate transatlantic flights from Norfolk, Va.
- 3448—Granting Continental Air Lines permission to intervene in the Braniff Airways application to remove restrictions on Route 15.
- 3449—Authorizing American Airlines to inaugurate non-stop service between Akron and Dayton.
- 3450—Authorizing Continental Air Lines to inaugurate non-stop service between El Paso and Midland, and between Midland and San Angelo.
- 3451—Granting temporary exemption to American Export Airlines to operate transatlantic flights from Charleston, S. C.
- 3452—Dismissing application of Gateway City Transfer Co. (Dockets 1254, 1618).
- 3453—Approving interlocking relationship of Robert V. Fleming and Pennsylvania-Central Airlines.
- 3455—Granting temporary exemption to Pan American Airways to operate transatlantic flights from Miami.
- 3457—Instituting investigation of Alaskan air carriers.
- 3462—Granting American Export Airlines permission to intervene in the Pacific case.
- 3463—Authorizing Continental Air Lines to temporarily suspend service at Garden City, Kan.
- 3464—Denying petition of Chicago, Black Hills and Western Air Lines for consolidation of its application under Docket 1591 in the North Central case, and deferring action on petitioner's request for a delay in a decision on that application until the North Central case has been decided.
- 3465—Amending service suspension order to permit American Airlines to land at Philadelphia municipal airport for one flight.
- 3466—Authorizing Pennsylvania-Central Airlines to inaugurate non-stop service between Detroit and Akron.
- 3467—Authorizing Pennsylvania-Central Airlines to inaugurate non-stop service between Muskegon and Lansing, and between Flint and Muskegon.
- 3472—Reopening Essair case for purposes of rehearing on organizational structure of the company only.

Ice Causes PAA and CAB To Do Fast Paperwork

Severe weather along the eastern seaboard had the CAB and Pan American Airways doing a bit of fast paperwork in an attempt to beat ice conditions.

Ice in Long Island Sound prevented Clippers from landing and taking off on regular transatlantic runs. Pan American asked the CAB for an exemption order to move to Baltimore. Then ice formed at Baltimore. A second order designated the Patuxent River at Cedar Point, Md., as an alternate. The weather moved in again.

Pan American then moved its transatlantic operations to Miami until the weather cleared up.

Here's another interesting report from Wayne Parrish, our editor, on one of his recent trips . . . Addressed to us, it says: "I tried out Trans-Canada's service from New York to Toronto recently and found it to be an interesting experience. TCA was unable to get space in the airline terminal in New York, so passengers have to report to the TCA-Canadian National Railway office at Fifth Avenue and 53rd Street. It's an unusual starting point for an airline trip and not very convenient since only the Fifth Avenue bus line serves this corner. I should imagine that TCA is anxious to join up with the other airlines in a single terminal.

"The office is carpeted and wholly unlike a passenger terminal. But aside from this, the procedure of checking in was the same. I noted that the majority of passengers were Canadians, which makes me feel that TCA's business will consist largely of Canadians who want to be loyal to their own airline system.

"At La Guardia the customs and immigration red tape adds to the total travel time, but isn't too serious. The plane service is okay. The cold plate luncheon wasn't much to write home about, but Lodestar facilities aren't elaborate enough for hot meal service. Customs and immigration at Toronto's Malton Airport are efficient and time-saving. Several days later I flew from Toronto to Windsor and found the service on the same high par. DC-3s would help a lot but TCA has good arguments about this type of plane being put on at this time.

"TCA has a very interesting central reservations control at Toronto, quite unlike the systems used in the U. S. Dave Paul, the space control supervisor, and Kentucky-born Mrs. Beatrice Russell, supervisor of the telephone answering service, gave me the two-dollar tour of the place, accompanied by W. G. Courtney, TCA's district traffic manager at Toronto. Wally is very proud of the heavy business Toronto generates for TCA, and it's rather clear that TCA could use a lot more airplanes to handle the business available . . ."

A couple of issues ago we reported that somebody phoned this office one day and asked about the difference between a stewardess and a hostess . . . We now have a welcome letter from Clancy Dayhoff, TWA's Western Region director of sales and services, and an old-timer in the business who should know the answers . . . "In May, 1929," he writes, "Western Air Express employed stewards on the Kansas City and San Francisco routes to pass out the box lunches and generally care for passengers. In July, when TAT inaugurated air-rail transcontinental service they employed couriers to do the same general job. Then Steve Stimpson, dtm for Boeing at San Francisco, got the bright idea of employing registered nurses to fly the Boeing biplanes San Francisco-Chicago. Late in 1935, Jack Frye gave Park Hay and myself the job of researching the thought of femininity on TWA planes and after a day's wrangling over 'stewardette' and 'hostess' Jack Frye settled the argument by voting for 'hostess'. He had good reason, too. Jack said the girls were to treat the passengers as if they were guests in their own homes. However, I named them 'Stewardettes' for a day because in a promotion with Paramount Pictures to announce sky gals on our ships, Terry DeLap used 'stewardette' in releases to the nation's press. I had mentioned the discussion to him and he hadn't understood that Jack Frye decided on 'hostess' . . . Thanks for the history lesson, Clancy . . ."

By the time you read this, we'll be off to the wars, uniform and all, as a war correspondent for this here magazine . . . Wayne Parrish, our editor, just returned from some 27,000 miles through the Pacific, and he's also been to England during the war, so to keep American Aviation's coverage complete it was decided that we should have a look at the China and India-Burma theaters . . . We'll be flying over, something we're really looking forward to, and still can't quite believe, despite the fact that it's done every day . . . We have ideas about keeping this column going from the outside—not on airlines, of course, but on interesting little sidelights . . . It will probably be pretty irregular, due to mail difficulties, but we'll do our best . . . See you later . . .

ERIC BRAMLEY

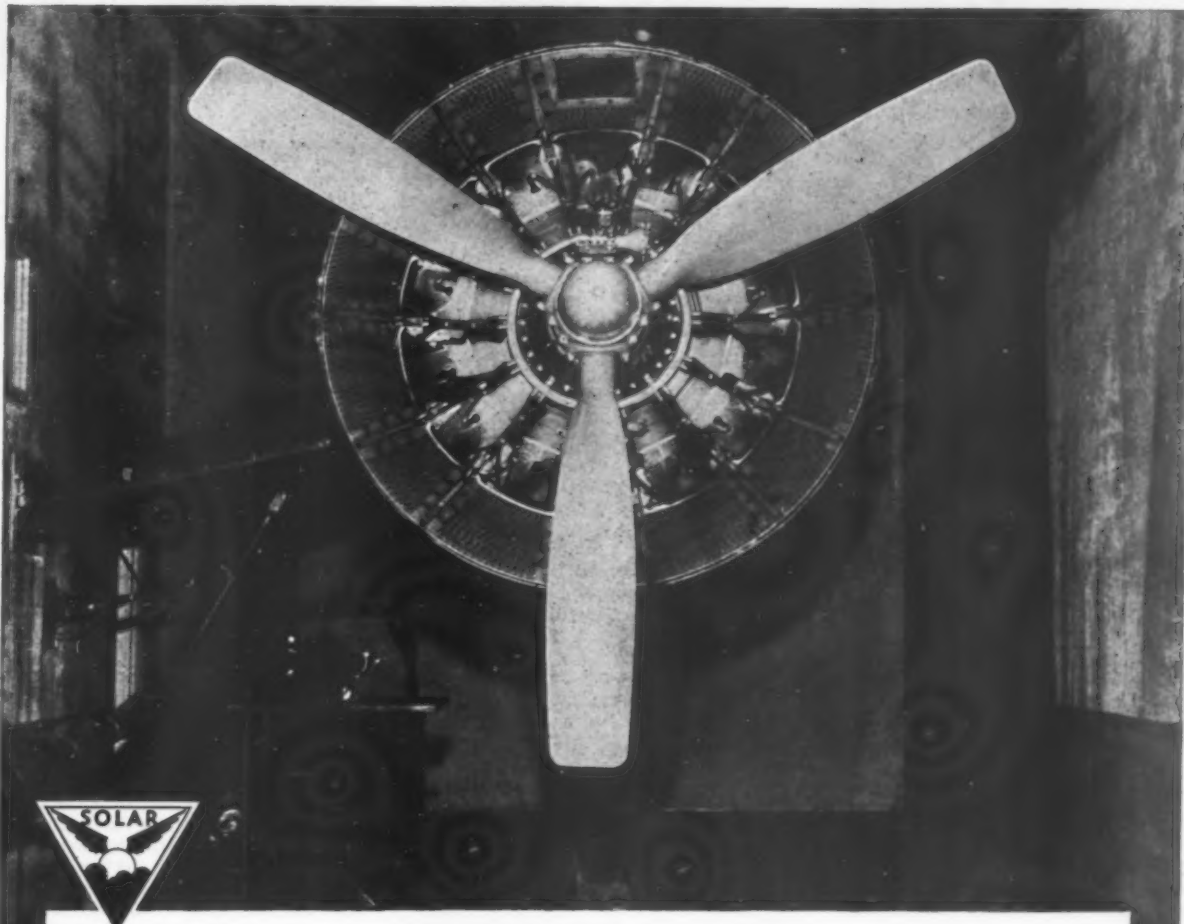
500,000th Propeller

The 500,000th Hamilton Standard propeller to be produced by the Hamilton Standard Propellers division of United Aircraft Corp., and its licensees and sub-contractors has come off the assembly line. This output is said to represent more than 75 percent of the total propellers installed on the nation's warplanes from advanced trainers through very heavy bombers.

Kellett to Enlarge

Defense Plant Corp. has increased its contract with Kellett Aircraft Corp. to provide additional equipment at plants in Philadelphia and Upper Darby, Pa., at a cost of approximately \$70,000. Contract with Goodyear Aircraft Corp. has been increased to provide additional facilities at Litchfield Park, Ariz., at a cost of approximately \$500,000.

Looking into the Future FROM A TEST CELL



One of the means of experiment used by Solar is a test cell, housing testing equipment and a Wright R-2600 engine. Here Solar engineers study the behavior of exhaust gases to determine the effect of the exhaust system on engine and airplane performance.

By such methods which eliminate guess work, Solar exhaust systems have been constantly improved for fifteen years, and today rate higher in performance yet are lower in price than ever before.

A vast new field is opening up for products which, like exhaust systems, have to do with the thermodynamics of exhaust gases... jet propulsion and gas turbine engines, heat exchangers, and accessories for the recovery of waste heat energy,

the elimination of hazardous gases, and the control and transfer of heat.

The Solar test cell not only offers a fascinating glimpse of things to come in this growing field, but typifies the methods by which Solar expects to lead in their development. Aircraft manufacturers are invited to consult Solar on their problems in this field.



SOLAR AIRCRAFT COMPANY SAN DIEGO 12, CALIF. DES MOINES 5, IA



Earling

Walsh

Executive

Alber J. Earling of New York has been appointed assistant to Carleton Putnam, president of Chicago and Southern Air Lines. He succeeds F. W. Wildman who has been named budget supervisor for the company.

J. Albert Woods, president of the Chilean Nitrate Sales Corp. has been elected a director of Eastern Air Lines.

Operations

Two Veteran pilots have returned to United Air Lines after almost three years in the armed forces. They are Lt. Col. Harvey Van Liew and Maj. E. L. Remelin.

Tracy Walsh has been appointed executive assistant to the vice president in charge of operations of Braniff Airways. For the last six months Walsh has been closing the reports and records of Braniff's military operations.

Capt. George A. Doole, master pilot with Pan American World Airways, has been appointed assistant chief pilot in charge of personnel at the transatlantic headquarters, La Guardia Field.

Lt. Col. Donald G. MacDonald, on military leave from United Air Lines, has been awarded the Legion of Merit "for his part in developing the Alaskan division of the Air Transport Command."

A Pan American World Airways' 10 year service pin has been awarded to Capt. Hamilton Smith, assistant chief pilot in charge of training for the Atlantic Division.

Capt. Les Smith has been made new chief pilot and check pilot for the eastern region of Northwest Airlines. Capt. Dudley S. Cox has been named chief pilot and check pilot for the western region.



Van Liew

Remelin



Young

MacDonald

Traffic

Hubert C. Watson, former assistant traffic-advertising manager of Pan American World Airways, and recently special assistant to the Atlantic division traffic manager at New York, has joined Walter Dorwin Teague, New York industrial designer, as consultant on aviation design.

Edward J. Ryan has been promoted to the city traffic manager for the Minneapolis-St. Paul territory of Mid-Continent Airlines.

Miss Frances Young has been placed in charge of the New Columbus, Ga., office of Delta Air Lines in the Ralston Hotel. She will have the title of chief ticket agent.

Preparing for the increased traffic that will result from the recent award of two important route extensions, PCA has revised ground personnel at several stations. Changes include the appointment of J. L. Bubna, from station manager in Akron to station manager in Chicago; C. H. Taylor from station manager in Lansing to assistant station manager in Chicago; Earl Richmond from chief agent in Detroit to station manager in Lansing; D. T. Metzger from chief agent in Pittsburgh to chief agent in Detroit; D. M. Munro from station manager in Youngstown to station manager in Akron; Gordon Payrow from station manager in Clarksburg to station manager in Youngstown; Bruce Simpson from chief agent in Cleveland to station manager in Clarksburg; C. J. Speer from operations agent in Cleveland to chief agent in Cleveland; H. H. Stewartson from operations agent in Pittsburgh to chief agent in Pittsburgh; W. G. Albers from assistant station manager in Knoxville to reservations manager in Chicago; J. L. Brown from acting reservation manager in Chicago to reservations manager in Norfolk; W. L. Warlick from station manager in Tri-Cities to station manager in Knoxville; and James Hauke from radio operator in Knoxville to station manager in Tri-Cities.



Doole

Langford

Miscellaneous

Reassignment of four United Air Lines air cargo supervisors has been announced. Glenn W. Evers, air cargo area manager at Chicago, has been appointed area manager in New York City, replacing R. M. Ruddick, who has been released to assist C. C. Thompson, United's vice president-public relations. W. J. Hartland, area manager in New York and the New England area since 1942, has been assigned to Seattle as air cargo area manager, succeeding D. E. Fleischner, who has transferred to United's San Francisco operations.

Phillip K. Langford of New York has been appointed purchasing agent for the Atlantic Division of Pan American World Airways.

United Air Lines has announced the appointment of E. H. Johnson as assistant director of personnel at the company's Chicago headquarters. E. J. Galbos succeeds him as regional personnel director at Cheyenne. Wesley J. Christensen continues as assistant to Galbos. C. C. Robinson has been named superintendent of passenger service supply at Chicago, succeeding Ralph Koza, who has been assigned to the staff of D. F. Magarrell, United's director of passenger service. H. K. "Doc" Cary, eastern regional superintendent of reservation service, has been named manager of passenger service at Portland, replacing D. H. Derr, now chief passenger agent at Los Angeles. Fred Miller transfers as chief passenger agent from Burbank to San Francisco, succeeding Robert H. Carlson, transferred to western operations. Peter Burfening, Jr., has been named manager of passenger service at Detroit. He is succeeded as manager of passenger service at Reno, Nev., by Robert F. Gardiner. E. E. "Cy" Perkins, chief passenger agent at Chicago, has been named manager of passenger service at Boston.



Evers

Hartland

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There are just two drawbacks to this method: (1) the range is limited; (2) it's not done after a certain age.

To get your voice heard *when* you want it and *where* you want it, Harvey-Wells manufactures *completely dependable* communications equipment.

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SETTING THE PACE FOR PROGRESS IN COMMUNICATIONS

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CAB Roundup

The Essair case has been reopened for the purpose of rehearing only with respect to determining "whether Essair presently has a proper organizational basis for the conduct of air transportation."

This question was raised in the recent opinion of the U. S. Circuit Court of Appeals, which recommended that a hearing be held to determine the status of S. W. Marshall, who was president of Essair at the time the certificate was granted.

Marshall later entered the Army, and subsequently returned to civilian status, and resumed his activities in the company, although not as president.

C. Edward Leasure, CAB chief examiner, said no date had been set for the hearing, but probably would be determined at a prehearing conference to be held before Examiner Thomas L. Wrenn in Fort Worth. Wrenn has been holding the Texas-Oklahoma hearing in Fort Worth. Both Braniff Airways and Essair are parties in the latter proceeding.

Colonial Files Exceptions

Colonial Airlines last fortnight filed exceptions to the examiner's report in the Florida case (Docket 570 et al) asserting that the recommended extension of Eastern Air Lines would give that carrier a monopoly of traffic between New York-Cleveland - Detroit - Toledo - Pittsburgh - Columbus-Chicago and the Piedmont area as well as Florida.

The exceptions also opposed the extension of Delta Air Corp., from Cincinnati to Chicago, and agreed with the examiner in his finding that the public interest does not require a route between Chicago and Norfolk.

In the same proceeding, Eastern Air Lines filed exceptions which concurred with the examiner's recommendations that its Route 6 should be extended from Columbia to Detroit, but asserted that "the enriched economic condition of National, Delta and PCA does not require further strengthening at Eastern's expense."

The latter statement was directed particularly at the recommendation for extension of Delta's Route 54. The examiner recommended that the application of National and PCA be denied.

Non-Stop Hearing March 12

Hearing on the application of Transcontinental & Western Air for approval of a non-stop operation between Detroit and St. Louis has been set for March 12, CAB Examiner Charles J. Frederick announced last fortnight in a prehearing conference report.

The CAB denied the petitions of American Airlines and Chicago & Southern that the application be consolidated for hearing in Docket 1696, under which C&S asks a permanent certificate between St. Louis and Cleveland, via Ft. Wayne. Exhibits will be exchanged March 5.

Des Moines Site of Hearing

Due to lack of suitable hearing room in Washington and present restrictions on travel, the North Central case (Docket 415 et al) has been tentatively set for hearing March 12 at the Hotel Fort Des Moines, Des Moines.

Local Service Favored

Public counsel has recommended in a brief in the West Coast case (Docket 250 et al) that two local-feeder applicants be certificated to operate routes on a temporary basis restricted against through service.

Recommended were Southwest Airways Co., and Empire Air Lines, the latter organized by Albert I. Zimmerly. The brief recommended that neither carrier be permitted to operate combination passenger and pick-up services.

Southwest's routes include (a) an inland route between Los Angeles and San Francisco, (b) coastal and inland routes between San Francisco and Portland, and (c) a route between Portland and Seattle.

Zimmerly would operate a local route, chiefly in Idaho, and a Boise-Reno route.

The brief also included these recommendations:

Inclusion of San Bernardino, Cal., on TWA's Route 2; inclusion of Santa Ana, Cal., and temporary inclusion of Ely, Nev., on Western Air Lines' Route 13; extension of American Airlines Route 4 to San Francisco on a restricted basis; temporary inclusion of Centralia-Chehalis, Wash., on United's Route 11; inclusion of Ogden, Utah, and Yakima, Wash., on United's Route 1; authorization of Western to operate a local coastal route on a temporary basis between Los Angeles and San Francisco, and authorization of Northwest Airlines to operate directly between Butte and Portland.

Western's local coastal route between San Francisco and Los Angeles would include the following points: Palo Alto, San Jose, Santa Cruz, Monterey, King City, Paso Robles, San Luis Obispo, Santa Maria, Santa Barbara and Ventura.

UAL Reasserts Position

United Air Lines has reasserted its position favoring a single air carrier operating under the U. S. flag on international routes in filed exceptions to the examiners' report in the North Atlantic case (Docket 855 et al).

United held that the examiners erred in failing to find that the public convenience and necessity and the public interest "would be best served in transatlantic air transportation by a single American air carrier operating in competition with foreign air carriers."

The exceptions also state that the examiners were in error in failing to find "such a single air carrier operating in competition with foreign flag carriers should have the loyal support of all domestic air carriers."

Foreign Permits Extended

The CAB has extended the temporary foreign air carrier permits of Aero Transportes, S. A., and Lineas Aereas Mexicanas, S. A. (LAMSA) for a period of 90 days from Feb. 4, 1945. Aero Transportes has been using the airports at Brownsville and Eagle Pass, Tex., pending repairs to the airports at Matamoros and Piedras Negras, Mexico. LAMSA has been using the airport at Nogales, Ariz., in its operation between Chihuahua, Cananea, and Nogales, Sonora, Mexico, because of unsafe conditions at the Mexican airport. The extensions when issued on Nov. 6 were not to exceed 180 days.

Caribbean Mail Pay Set

The Civil Aeronautics Board has issued an order setting a tentative rate of mail pay for Caribbean Atlantic Airlines over its Route 59, and ordered the carrier to show cause why this compensation should not be made permanent.

The Board found that a fair and reasonable rate for the transportation of mail by Caribbean Atlantic from Nov. 12, 1943, to June 30, 1944, would be 3.25 cents per plane mile.

Due to changed operating conditions occurring about July 1, 1944, the CAB fixed a higher tentative rate, to be effective on and after that date, of 21.75 cents per plane mile for a base poundage of 300 pounds of mail. The CAB also provided for an excess poundage rate of .03 cents per plane mile.

Route 59 runs between San Juan, P. R., and Mayaguez, P. R., via Ponce, P. R., and between Mayaguez and San Juan, via Charlotte Amalie, St. Thomas, V. I., and Christiansted, St. Croix, V. A. The carrier has conducted no operations on the San Juan-Ponce-Mayaguez segment of the route, however.

Mail service was inaugurated on the San Juan-Virgin Islands segment of the route Nov. 12, 1942, on the basis of one round trip daily, except Sundays and holidays. No mail pay had been set previously, and the show cause order represents the first step in determining compensation to be paid the carrier for these services.

For the period Nov. 12, 1942, to June 30, 1944, Caribbean Atlantic reported non-mail revenues of \$345,547 and operating expenses of \$327,494, thus showing a net profit of \$18,053. These figures were adjusted by the CAB, however, for the purposes of rate making, cutting the operating profit before mail pay to \$12,964.

Delta Asks Rehearing

Delta Air Corp. has petitioned for reconsideration of its decision of Jan. 13 involving service between Kansas City-New Orleans and Tulsa-New Orleans. In that decision, Mid-Continent Airlines' Route 26 was extended from Tulsa to New Orleans, and the carrier was granted a permanent stop at Joplin, Mo.

More Time for Answer

Eastern Air Lines has been granted an extension until March 6 for filing its answer to the order to show cause why the carrier's mail pay should not be reduced from 60 to 32 cents a ton mile.

Rihl Status Stated

Pan American Airways has filed notice that George L. Rihl, PAA vice president, no longer holds a similar post with Compania Mexicana de Aviacion, S. A.

Intrastate Line Opposed

Objections to a proposed intrastate operation in Arizona have been voiced by two presently certificated air carriers, a feeder applicant and a surface carrier. The applicant, William Beatus, owner of the Nogales, Ariz., airport, applied to the Arizona Corporation Commission for a certificate to operate between Nogales and Phoenix. The objections were submitted by Transcontinental and Western Air, American Airlines, Greyhound Skyways, and Citizen Auto Lines.

Eastern Defends Boston

E. V. Rickenbacker, president and general manager of Eastern Air Lines, asserted in a prepared statement that his company is not opposing designation of Boston as a terminal for transatlantic air carriers, but is in fact supporting Boston as an "outstanding terminal, and not merely a way station on an international route."

Rickenbacker said his statement was made to clear up a misunderstanding on Eastern's position with respect to international service to Boston. Eastern was not an applicant in the recent North Atlantic route proceedings, but as an intervenor filed exceptions to the examiners' report.

Atlanta, Nashville Favored

Prehearing conference in the CAB's Southeastern States case was held before Examiner Ross I. Newmann, with the more than 40 applicants favoring Atlanta or Nashville as the site for the hearing. No date for the hearing was set, but most applicants favored a date 30 days after the exchange of exhibits, which will probably be set for June 1. Eleven applicants indicated that they would not pursue their applications at this time. Additions to the list of appearances were Tri-State Transit, Braniff Airways, Transcontinental and Western Air, Chicago and Southern Air Lines, and the Port of New York Authority. The latter appeared as an intervenor.

KC-Florida Prehearing Set

Notices of prehearing conference to be held in Washington April 23 have been sent to seven applicants proposing service between Kansas City-Memphis-Florida. C. Edward Leasure, CAB chief examiner, said that scope of the hearing may not necessarily be limited to those geographical areas or applications.

Applicants notified were Mid-Continent Airlines, Chicago and Southern Air Lines, National Airlines, Delta Air Corp., Eastern Air Lines, Braniff Airways and Continental Air Lines. The question of consolidation of the applications will be open for discussion during the conference.

Aluminum Increase Directed

The War Production Board has directed that a 10-million-pound increase in monthly aluminum ingot production be accomplished by four plants where operations had been curtailed. The plants include the Aluminum Company of America's mills at Massena, N. Y., Badin, N. C., and Niagara Falls, N. Y., and the Defense Plant Corporation plant at Spokane, with Alcoa providing four million pounds of the expected increase and DPC six million pounds.

GM Makes 180,000 Engines

Over-all production figures in terms of actual war material produced have been revealed for the first time by General Motors Corp. Output figures previously had been limited to terms of dollar volume. Since the beginning of the war program in 1940 General Motors has produced more than 180,000 plane engines and more than 9000 complete bombers and fighter planes.

C. & S. Asks Rehearing

Chicago and Southern Air Lines has petitioned the CAB for rehearing, reargument and reconsideration of its decision of Dec. 16 (Docket 629 et al) in which it denied the carrier's application for a route between Chicago and Detroit via Toledo.

C&S held that the CAB had "failed to appreciate the need for local service between Chicago and Detroit," and that since the hearing had been held an "important development" had come about which would permit the carrier to operate the Chicago-Toledo-Detroit or Chicago-Detroit route at a cost considerably less than that stated in the record of the case.

The petition pointed out that in its decision of Aug. 3, 1944, the CAB had amended Chicago and Southern's certificate on Route 53 to authorize service between Detroit and Memphis, and as a result the carrier is establishing offices in Detroit and Toledo, thus becoming fully equipped to handle service at the latter two points and Chicago.

Chicago and Southern asserted that the CAB had failed to recognize this fact, and also took issue with the CAB's conclusion that the carrier proposed to coordinate schedules over the new route with schedules over the existing Chicago-New Orleans-Shreveport route, but for the most part would expect to rely on Chicago-Detroit, Chicago-Toledo traffic, including traffic on those segments making connections at Chicago.

'Gremlin Chasers' Check On Electric Propellers

Employee-developed "gadgets" have been playing an important role in the servicing of electric propellers and other parts of the B-26 Marauder electrical system at the Glenn L. Martin Airport, Baltimore. One of these is a 1 x 2 x 2-inch box which is used to operate governor relays on electric propellers when the engines are standing still, thus eliminating all need for the former practice of "wire jumping." The new device is plugged into the relay circuit at the governor, and the relays are operated by slipping a toggle switch mounted on the top face to one side for increase and the other for decrease.

Another of the gremlin chasers—a small fibre box mounting four lights hooked up in a multiple purpose circuit—makes it possible to check the complete circuit of an electric propeller with the engine running, locating defects in seconds. It can be plugged into the propeller electrical system either forward or aft of the propeller relay box, or into the governor, to provide three sets of checks covering automatic and increase and decrease manual.

Similar to the propeller circuit checker is a small fibre box mounting two lights which is used to check magneto grounding. Not only does it provide a surer check than previous methods, but it allows one man to do a job which formerly required two, since it is only necessary to hook the tester into the circuit and then work the magneto switch on the instrument board to determine whether the magnetos are properly grounded.

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Question of Airport Spacing Brings Clash of Two Plans

CAA Guided by Size Of Fields; Critics Rely On Traffic Patterns

ALL PROPOSALS for regulation of airport spacing appear to stem from either of two basic premises. The first, that airport spacing should be governed by the size of the airports involved, is primarily advocated by the Civil Aeronautics Administration; the second, that use to which an airport is put and traffic patterns necessitated by the types of planes in use is the proper standard for determining spacing, is the conclusion of the Minneapolis-St. Paul Metropolitan Airports Commission and the NAA Joint Airport Users Conference.

The CAA plan for minimum distances between airports based exclusively on the present size of the existing or contemplated airports has been circulated to field personnel for comment but has not been adopted as a regulation yet. CAA explains that minimum standards are needed to furnish "the various state aviation commissions and metropolitan airport districts with reasonable standards based upon safety, for application by such agencies in licensing the establishment of airport facilities."

14-Mile Separation

The CAA conferees propose that Airports at which instrument operations are to be conducted simultaneously will require 14-mile separation from center to center. The traffic patterns for the various classes of airports under contact flight conditions are: Class 1, 2-mile radius; Class 2, 2½-mile radius; Class 3, 3-mile radius; Class 4 (and above), 4-mile radius.

When a secondary airport is located at the minimum distance from a major terminal, contact operations at the secondary airport must be limited at such time as instrument operations are conducted at the major airport. Certain other areas along air traffic lanes where air traffic is concentrated will require that restrictions be placed upon the location of airports which are immediately adjacent to such traffic lanes because of safety.

The interdepartmental Air Traffic Control Board, a special war committee, has a ruling still in effect, that no new airport be constructed closer than six miles, center to center, to any existing Class 2 airport or better. Further, no new airport may be established within two miles of the center of on-course signal of any leg of a radio range transmitter which lies within any civil airway within 15 miles of the radio range transmitter unless the airport to be developed is to be the principal airport in that vicinity.

Pointing out that CAA had drawn up its minimum standards on the basis of the length of the runways in each type airport, the Minneapolis-St. Paul Commission states that since the reason for airport separation is "to achieve safe flight operation through the separation of airport traffic patterns, it appears to us that the separation of airports by the afore-

mentioned methods of individual classification is a fallacy. We are firmly convinced that airports should be separated according to the use to which they are to be put."

By using this criterion all airports can be divided into two types: "A"—airports at which so-called scheduled operations take place under restricted or instrument conditions and are, assumedly, controlled airports; and "B"—airports at which non-scheduled operations take place under noninstrument conditions and may or may not be controlled airports.

Radius of 1½ Miles

A normal traffic pattern would be laid out and flown so that the entire operation of approaching a "B" airport could be conducted within a 1½-mile radius from the center of the airport, with the addition of an extra half mile outer area for the few larger planes which might wish to use the field, giving a minimum distance of four miles center to center for two "B" airports.

"From additional study and discussion," the report states, "it is concluded that the traffic pattern with a radius of four miles around the center of an 'A' type airport will be ample and sufficient for instrument operation of such airports. . . . This would then space an 'A' and 'B' type of airport six miles center to center from each other, or two 'A' type airports eight miles from each other, center to center."

Without making any conclusive recommendations the subcommittee on airport spacing of NAA's Joint Airport Users Conference ruled out the possibility of using CAA's classification by size as a rule of thumb governing airport spacing because "several different airport classifications might exist in an operational area." The Conference urged the use of traffic patterns as the basis for an airport separation regulation. Besides the development of standard traffic patterns, it urged Governmentally administered zoning of the different types of traffic using the facilities and the consideration of approach channels, new instrument equipment, terrain, and topography in determining the spacing of airports. The subcommittee agreed that spacing of airports should be based upon a separation from boundary to boundary (rather than center to center) so that the standard aircraft approach pattern could be followed simultaneously at each aircraft without hazard.

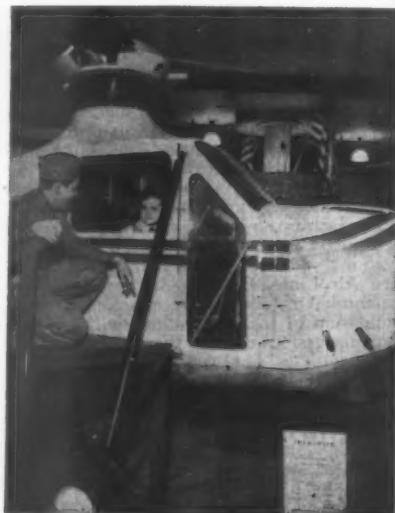
Model Airport Radio Shop

Lear, Inc., has just opened a "model airport service station for aircraft radio" at Grand Rapids, Mich., Municipal Airport. Hal Sagert will have charge of the new shop, which has two shielded testing rooms—one for service of all types of automatic direction finders, and the other for aircraft receivers and transmitters.



Grandmothers Fly—

Grandma Greenwood Cocanougher (right), Kentucky's only woman instructor of both Army and Navy cadet pilots, is shown teaching Mrs. Barbara Ray, another grandmother, how to operate the controls of an Aeronca Chief. Mrs. Cocanougher has flown 1700 instruction hours during the last three years.



Postwar Air Flivver—

The Aero-nautical Products, Inc., helicopter, shown on display at the Hochschild, Kohn & Co. store, Baltimore, is a two-place, all-metal machine with a three-bladed main and two-bladed anti-torque rotor. The main blades are 14 ft. long. It has a four-cylinder, 140 h. p. Lycoming engine mounted in the nose to permit better cooling. Weight ready to fly with 25 gallons of gasoline is 1600 lbs. and gross weight is 2100 lbs. It has a top speed of 110 m. p. h., a cruising speed of 85-90 m. p. h. and a ceiling of 6000 ft. Price is quoted as \$2500, but it is hoped to reduce this to \$1500 when production gets under way. This is the same machine recently used by Filene's store in Boston to demonstrate pick-up and delivery.

Standard Oil Forsees Private Flying Growth; Issues Airport Booklet

The Standard Oil Company of New Jersey, convinced that the greatest expansion of flying expected in the postwar will be in the field of personal aircraft and the private flyer, has issued a guidebook for communities to use in establishing a network of small landing fields throughout the nation.

Thousands of communities can have broad opportunities for civic improvement and profit through the creation of small airfields and airparks, the oil company declares in the booklet, "Community Airports and Airparks." It states that if a community "is able to read the signs which have been written by the wings of war, it will take steps promptly to broaden its trading area, attract desirable air-commuter citizens, and put itself on the nation's air map.

Steps necessary to the proper establishment of a community airpark are outlined so that the booklet can be a guide to all interested communities. It is being distributed from Room 1610, 26 Broadway, New York 4.

Parks Predicts Noise Problem Will Be Solved

The challenge of too much noise from aircraft landing at Airparks in residential and business districts will be met and should not be a major obstacle to a national Airpark program, in the opinion of Oliver L. Parks, president of Parks Air College.

He pointed out that Airparks are being designed and built for light planes where the noise element is small, and added that while lightplane noise may not be overcome altogether, it will certainly be cut down until it does not exceed the noise of automobiles.



Easy Maintenance—Servicing of engines used in lift trucks and other rolling stock at Beech Aircraft Corp. has been simplified by this engine repair mount which makes it possible for the repairman to get at any part of the machine and still maintain a standing position. It consists of two rotatable end plates mounted in a cradle, and is equipped with several types of bolt openings to accommodate different types of engines.



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Successful warfare—and successful manufacturing, too—is waged by men who want to serve, and who have the ability and equipment to win.



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Eldon, Mo., Votes for Airpark To Become Model Field for Small Towns

"VOTE YES, scratch no, and watch our town grow!" rang out the challenge to the citizens of Eldon, Mo., population 2580. On February 13, they responded nine to one in favor of placing Eldon on the nation's air map as the pioneer of airparks.

As the town explained it to the voters "the Eldon Model Airpark is being developed in conjunction with the Missouri Department of Resources and Developments to demonstrate to other communities in Missouri and in the nation, what an airpark should be—how to plan, finance, construct and operate it—how much it will cost and how to get an airpark at a price they can afford to pay. The entire aviation industry has been invited to participate by providing permanent exhibits of hangars, service buildings, fuel equipment and other airpark equipment. The Eldon Airpark will provide the means for the people of Eldon to participate as leaders in postwar aviation development."

To prove the seriousness of its intention, Eldon began construction work on the site of the airpark before election day. To pay for the airpark, the city will float a bond issue of \$25,000, of which \$11,000 will pay for the property including a farmhouse which will be converted into a club and \$14,000 will cover improvements. The plans call for two turf runways, one 300 x 2000 feet and the other 300 x 2300 feet, service facilities for personal plane owners and operators of flight service and sales organizations. Tennis courts, a nine-hole golf course, and picnic grounds will help turn the small airport into a recreational center.

The Eldon airpark which originally was planned as a model for Missouri developed into a national model when The Personal Aircraft Council of the Aeronautical Chamber, National Aeronautics Association and National Aviation Trades Association became interested in the project and sent representatives to co-operate in the planning.

A house to house canvass in Eldon revealed that, although no one at present owns a plane, 11 persons are planning to purchase one after the war. Letters de-

scribing the projected airpark sent to the 53 Eldon servicemen and women in the airforces met enthusiastic response.

Already the project has attracted to Eldon a new manufacturing concern which will employ 300 persons.

Besides the use which Eldon citizens will have for the airpark, the city anticipates a volume of traffic from vacationers flying to the resort hotels of the nearby Lake of the Ozarks.

The 101-acre airpark is due to be completed by June, Mayor Robert Reed said. He has appointed as the world's first airpark commissioner the owner of a local motion picture theater, who will be responsible for keeping detailed records of each step of the planning, site selection, property acquisition, development and financing, construction costs, management arrangements, operating procedure and maintenance cost and a complete record of all revenue. Both Civil Aeronautics Administration and Personal Aircraft Committee officials believe these records will prove an invaluable guide in the

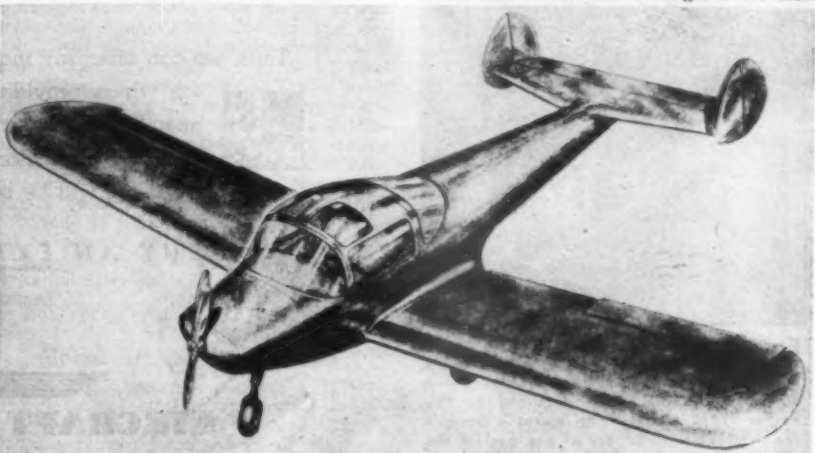
projecting of future airparks throughout the country.

Aeronca Reveals Plans For Spin-Proof 'Chum'

A new two-place, two-control, spin-proof, low-wing personal plane with tri-cycle landing gear and all-metal fuselage is the latest addition to Aeronca Aircraft Corp.'s line of postwar planes for the private flyer. Designated as the "Chum," the new plane will be built under license from Engineering & Research Corp., makers of the Ercoupe, and will reportedly sell for about \$1,800.

Special features of the Chum include large auto type doors, enlarged baggage compartment, hydraulic brakes, ball bearing controls, and a deluxe interior with a streamlined instrument panel. Utmost visibility will be provided by extra large windows including two in the cabin's top. A new and handier control wheel and a new foot rest are provided for pilot comfort. A starter and generator will be standard equipment.

The Chum is designed to cruise at 108 miles per hour, with a top speed of 120 miles per hour and a landing speed of 50 miles per hour. It will climb 650 feet per minute and has a range of 470 miles.



Aeronca's Chum—

This two-seat postwar personal plane will have only two controls and is being built under Ercoupe patents. It will cruise at 108 miles per hour, land at 50 miles per hour, and will have a 470-mile range. It will reportedly sell for about \$1800.



New Development in

BLACK LIGHT

FOR INSTRUMENT ILLUMINATION

The new GRIMES B-2930A Ultra-Violet Light for instrument illumination is a "natural" for night flying where maximum visibility is necessary. Approved by the Army Air Forces as Type C-8 (specification 32451), this new design offers many advantages:

- 1** RHEOSTAT CONTROL BUILT IN THE LIGHT to provide any desired degree of lighting intensity.
- 2** COMPLETE ELECTRICAL CONTROL with instant starting merely by turning rheostat knob.
- 3** SIMPLIFIED DIMMING with no moving mechanical parts.
- 4** OPERATES DIRECTLY ON 28 VOLTS D.C.
- 5** EFFICIENT OPERATION at all temperatures.
- 6** DETACHABLE BASE AND RETRACTABLE CORD facilitate use for map reading. A straight cord of any specified length can be supplied if desired.



A-3156 EXTERNAL RESISTOR
(supplied with light)



B-3244 MOUNTING BLOCK FOR RESISTOR
(supplied if desired)

GRIMES PART NO.	DESCRIPTION
B-2930A-RC	Light complete with retractable cord (60" extended) and external resistor A-3156.
B-2930A-SC	Light complete with straight cord (60" unless otherwise specified) and external resistor A-3156.
B-3244	Mounting block for resistor.

Further information on this new, simplified ultra-violet cockpit light will be supplied on request.

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Spin Dimpler

A new tool which dimples R-301-T, 75-ST and the new magnesium alloys by spinning the metal into place has been developed by The Glenn L. Martin Co., Baltimore, and will be made available to the industry through licensed manufacturers. It is used in a standard drill press. Dimples formed with the spin dimpler feature a sharp edge similar to a machine countersink, and leave no void around the rivet head as in the case of the ordinary pressed dimple.



Test Panel for Gyroscopes

Sperry Gyroscope Co. has developed a test panel which is speeding up repairs of its electronic gyroscopes by 500 percent on the European battlefronts. It is set upon a board six feet square and is composed of six components, each for use in making a particular test. It can be used to check the electrical system, find breaks or short circuits in the wiring, or to test the gyro operation and the turn indicator.

Simple Drill Grinder

To permit the sharpening of twist drills by inexperienced employees, Fred F. Ten Eyck, Los Angeles, has developed the E-Z Drill Grinder which is claimed to be virtually fool-proof. It can be set up quickly on a grinder frame, and has a protractor feature permitting quick adjustment to three drill point angles for various hardnesses of metals.



"Teller" Signal Indicator

The Dietz Mfg. Co., Los Angeles, has developed a continuously self-testing, small size, shock resistant, three-way signal indicator for antenna reel, bomb release, landing gear position, oxygen warning, fuel pressure and similar applications. Known as the "Teller" it weighs only .44 ounces and is of simple construction with no filament to burn out and no springs or levers to give trouble.

Position Indicator

A position indicator which enables air navigators to determine their exact latitude and longitude virtually at a glance is now in quantity production at the Fisher Body Division of General Motors Corp. It is being used on the B-29 Superfortress and other American warplanes.

Jig Uses New Principles

A new clamping jig known as the "Cone-Lok" has been introduced by N. A. Woodworth Co., Detroit. It is constructed to utilize the braking power of perfectly mated male and female cones, and has a minimum number of wearing parts. Three styles are being manufactured at present—the three-post shown here, the "up clamp" type, and the "bridge" type.



Plastic Blind Rivet

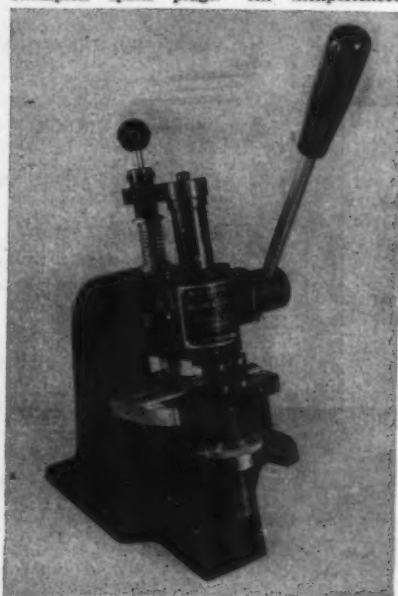
A new plastic rivet permitting one man operation and blind fastening has been announced by the Plastic Development Division of Victory Manufacturing Co., South Pasadena, Calif.



Known as the Des-Rivet, the design is based on a wedging action and takes full advantage of the flow characteristics of plastic materials under pressure. It consists of a head with plug attached by a thin breakaway section and a tapered shank split to form four tapered fingers. Shank and head are hollow to the same diameter as the plug. Impact from the rivet gun shears the plug and drives it into the shank until it is flush with both ends of the rivet maintaining the contour of the head. Des-Rivets may be singly inserted or assembled in sticks by inserting the undriven plug of one rivet into the shank of another. A wide variety of shapes and sizes are available in several plastic materials including nylon. Physical properties of these rivets depend upon the plastic from which they are molded.

Spark Plug Gap Setter

The Oden spark plug gap setting machine is now available commercially. For many years, the gapping of spark plugs has been an arduous job that only a skillful operator could do efficiently. Today, with millions of spark plugs in use by the aviation industry, this overhaul bottleneck has at last been eliminated with the invention of the Oden machine. It is claimed by Durham Aircraft Service, Flushing, N. Y., the manufacturers. This machine has been designed to quickly and accurately set two gaps at once on Aero, BG, Bendix and Champion spark plugs. An inexperienced



Turco Carbon Remover

Turco Products, Inc., Los Angeles and Chicago, has developed a supplementary treatment known as Carboblast for aiding in the removal of carbon from aircraft, automotive and diesel engine pistons and other parts. It consists of varying sized ligno-cellulose pellets used with modified sandblasting equipment. A specially designed cabinet having two ports, a glass window at eye level, and a funnel-shaped hopper holding about 50 pounds of pellets is available.

AC Power Supply System

Two new AC Power Supply Systems consisting of variable frequency alternators, carbon pile voltage regulators and compounding units have been designed by Eclipse-Pioneer Division of Bendix Aviation Corp. to provide a source of either constant or variable



frequency for AC or rectified DC power. One is rated at 25 KVA, 18.75 KW, and the other at 66.6 KVA, 50 KW. The alternators incorporate an integral exciter and brushes are specially designed for efficient, long service at high altitude. Sealed, pre-lubricated bearings provide complete lubrication under continuous operating conditions.

Direction Finder Works on DC

A new radio direction finder which operates from the regular storage battery supply of 28 volts DC has been developed by Fairchild Camera & Instrument Corp., New York. This new compass is a four-band instrument, 28 percent smaller in size and 21 percent lighter than the old Fairchild three-band model.

Beacon Burns for Year

A 400 candlepower beacon which will flash 30 times a minute and will go for a year without refueling or servicing has been developed by the Air Technical Service Command, Air Installations Division, Headquarters Army Air Forces, and engineers of the American Gas Accumulator Co., Elizabeth, N. J. It uses 10 fuel tanks, and has a special sun switch that turns it on at night and off in the morning. Baffle assemblies protect the pilot light in winds up to 110 miles per hour.

Self-Aligning Springloc Fastener

A self-aligning springloc fastener, which is extremely light in weight and does away with the traditional cross pin, has been developed by The Glenn L. Martin Co., Baltimore, and will be marketed through licensees. It is especially useful for attaching cowlings and is interchangeable with AN 228 and AN232 fasteners as far as drilling and dimpling is concerned. One stud length will suffice for all purposes. It



is known as the Cariso after its inventor, Carl Sorensen, chief Martin standards engineer.

Hughes Will Build Feederliner With Twin Engines and 18 Seats

HUGHES AIRCRAFT CO. has announced its entry into the commercial transport field with the disclosure of designs for a twin-engined, 18-passenger feeder airliner to be tentatively known as the Hughes Feederliner. Construction of a prototype is expected to start as soon as let up in present military contracts will permit.

The Feederliner is powered by two Pratt & Whitney Wasp Jr. R-1535SB-4 engines developing 825 horsepower at take-off and driving three-blade, constant speed, full feathering, reversible pitch propellers. Performance specifications give a top speed of 237 miles per hour at 10,000 feet, a cruising speed of 186 miles per hour with 60 percent power at 5,000 feet and a stalling speed at only 57.5 miles per hour.

Of high-wing monoplane design, the new ship will have a design gross weight of 18,500 pounds of which 6,000 pounds will be useful load. The fuselage is exceptionally wide and will permit the installation of four seats abreast with an aisle between. Two cargo compartments are provided forward and aft, and the forward bulkhead is movable so that seats can be taken out and cargo capacity increased. Two cargo doors are provided on the left side of the fuselage, while the entrance to the passenger cabin will be split horizontally with the lower half of the door opening outward and down to provide cleated steps into the cabin. All doors will be hydraulic actuation from the pilot's cabin in addition to manual release.

Optional equipment will include a mail and cargo pick-up gear installed in either cargo area, an inflight mail sorting rack, and cabin hand-holds for standees.

Other unusual features include a fuselage ground clearance of only 13 inches, a check valve installed flush with the bottom surface of the wing to permit underwing fueling, and a special com-

bination of flaps, spoilers and ailerons to permit small field operation and low speed maneuvering.

SPECIFICATIONS

Performance:

Top speed at sea level—217 mph
Top speed at 5,000 ft.—228 mph
Top speed at 10,000 ft.—237 mph
Cruising speed at 5,000 ft. (60% power)—186 mph

Climb at sea level—1,290 ft./min
Climb at 5,000 ft.—1,260 ft./min
Service ceiling—28,500 ft.
Take-off—980 ft.
Take-off over 50-ft. screen—1,325 ft.
Landing run—700 ft.
Landing over 50-ft. screen—1,530 ft.
Stalling speed—57.5 mph

Dimensions:

Fuselage

Overall length—65.8 ft.
Overall height—11.1 ft.
Vertical stabilizer height—23.0 ft.
Maximum width—10.0 ft.
Maximum depth—10.0 ft.
Ground clearance—13 inches

Wing

Span—57.65 ft.
Area—820 sq. ft.
Root Chord—14.18 ft.
Tip Chord—4.72 ft.
Mean Aerodynamic Chord—10.22 ft.
Wing loading—22 lbs./sq. ft.
Dihedral—2.5 degrees
Incidence—3.0 degrees
Taper ratio—3.1
Aspect ratio—9.15

Vertical Tail Surface

Height—10.6 ft.
Area—100 sq. ft.
Root chord—10.7 ft.
Tip chord—4.7 ft.

Horizontal Tail Surface

Span—24 ft.
Area—164 sq. ft.
Root chord—9.2 ft.
Tip chord—4.7 ft.

Landing gear—Tricycle

Fuel capacity—250 gal.

Aircraft Ignition System

A low tension aircraft ignition system which goes a long way toward making practical flights at altitudes of 50,000 feet and over has been developed by Scintilla Magneto division, Bendix Aviation Corp. The new system makes possible high voltage sparks at the spark plugs while replacing a high tension current of more than 12,000 volts with a low tension current of comparatively few hundred volts. In addition, it is able to deliver a higher voltage spark than other systems after spark plugs become fouled with use.

P. & W. Delivers 300,000th

The 300,000th Pratt & Whitney aircraft engine built since Jan. 1, 1941 has been delivered to the armed forces, Pratt & Whitney Aircraft Division, United Aircraft Corp., announces. This does not include 8,000 engines delivered to so-called commercial buyers in 1941-42, many of which were used to power British and French military aircraft, nor 24,446 engines delivered prior to Jan. 1, 1941. It does include output of Ford, Chevrolet, Buick, Nash, Continental Motors and Jacobs Aircraft in addition to that of Pratt & Whitney plants in East Hartford and Kansas City.

Industrial Relations

Group Elects Willis

Ivan L. Willis, director of industrial relations of the Curtiss-Wright Corp., was



Willis

chairman.

Major topic for discussion was veterans re-employment, and a subcommittee headed by Beaman was established to study and report detailed recommendations on the problem to the full committee.

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They Head Public Relations Group—A. M. Rochlen, director of industrial and public relations for Douglas Aircraft, third from left, was elected national chairman of the Public Relations Advisory Committee of the Aeronautical Chamber of Commerce at Los Angeles recently. John E. Canaday of Lockheed Aircraft, left, and J. W. Sweetser of Curtis-Wright, right, were chosen vice chairmen. L. D. Lyman of United Aircraft, second from left, was former chairman. The goal of the Committee is to help inform Americans on the importance, to them, of air power, well maintained and wisely used, and to give them an accounting of the aircraft industry's accomplishments and problems.

Labor Views Umpire Cautiously

Plans for the establishment of an umpire system for the handling of industrial relations among the West Coast aircraft plants are being viewed cautiously by union labor, with indications, however, that a sincere tryout is in order.

Spokesmen for District Lodge 727, International Association of Machinists, AFL, said last fortnight that the agreement signed by the union and industry representatives was merely an "agreement for establishment of such a system if an agreement can be reached on details of jurisdiction and procedure."

The Union spokesmen added that possibly the umpire system would be the speediest and fairest method of handling such disputes. However, the IAM especially wants to know more about the arrangement before signing, and particularly wants to know how precedents will be established, how umpires will be paid, and similar organizational questions.

Concluded the Union: "So far the matter goes no further than an agreement to give the arrangement a sincere investigation with a view to its adoption."

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Aviation Division

New Approved Engines Props and Appliances

The Civil Aeronautics Administration has approved the following new types of engines and propellers, and added new models to previously type certificated engines, propellers and appliances. The approval numbers and dates of approvals are in parenthesis.

NEW TYPES

Engines

Continental, models C-75-8 and C-75-12; 4 cyl. horizontally opposed air cooled; 75 hp at 2275 rpm at sea level pressure altitude; weight (dry) 180 lbs. and 185 lbs., respectively. Model C-75-12 has provisions for electric generator and starter. (Type Certificate No. 233, 11-14-44)

Propellers

Aeroproducts, model A532F 3-blade propeller with A20-156-17 blades; steel hub and blades; 11 ft. 7 in. diameter; hydraulically controllable (feathering); 1200 hp., 1667 rpm. (Type Certificate No. 810, 1-26-45)

Flottorp, model 96; wood; 96 in. diameter; 64 in. to 60 in. pitch; 225 hp. 2175 rpm. (Type Certificate No. 809, 1-15-45)

Stone, models S65C, S65C-2, S65C-4, S65C-6; 72 in., 70 in., 68 in., 66 in. in diameter, respectively; 56 in. to 46 in. pitch; 65 hp. 2350 rpm. (Type Certificate No. 808, 11-3-44)

Stone, models C65CC, S65CC-2, S65CC-4, S65CC-6; 72 in., 70 in., 68 in., 66 in. diameter respectively; 57 in. to 29 in. pitch; 65 hp. 2350 rpm. (Type Certificate No. 808, 11-3-44)

Stone, models S65F, S65F-2, S65F-4, S65F-6; 72 in., 70 in., 68 in., 66 in. diameter, respectively; 50 in. to 42 in. pitch; 65 hp. 2350 rpm. (Type Certificate No. 808, 11-3-44)

Stone, models S65L, S65L-2, S65L-4, S65L-6; 72 in., 70 in., 68 in., 66 in. diameter, respectively; 44 in. to 34 in. pitch; 65 hp. 2350 rpm. (Type Certificate No. 808, 11-3-44)

NEW MODELS

Engines

The Aviation Corp., model Lycoming R-680-B4E (Military R-680-17); 9 cyl. radial air cooled; 225 hp at 2100 rpm at sea level; weight (dry) 512 lbs. (Type Certificate No. 108, 11-21-44)

Propellers

Sensenich, model 43K10107; wood; 72 in. diameter; 42 in. pitch; 65 hp. 2350 rpm. (Type Certificate No. 691, 1-6-45)

Flottorp, model 76; wood; 76 in. diameter; 62 in. to 48 in. pitch; 130 hp. 2550 rpm. (Type Certificate No. 754, 1-31-45)

Flottorp, model 74; wood; 74 in. diameter; 62 in. to 48 in. pitch; 130 hp. 2550 rpm. (Type Certificate No. 754, 1-31-45)

Appliances

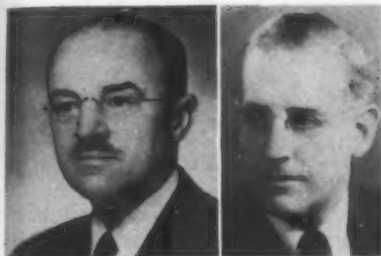
Hayes, low pressure wheels models 840A, 841A and 842A; 8.00-4; approved static load per wheel 950 lbs. (Type Certificate No. 10, 7-31-44)

Hayes, low pressure wheels model 1103A; 11.00-12; approved static load per wheel 5000 lbs. (Type Certificate No. 10, 1-24-45)

Switlik, parachute models CC5-24S and CC5-26S; back pack; flat canopy type; 24 ft. and 26 ft. diameter, respectively; 19 lbs. to 22.5 lbs. weight; silk or nylon. (Type Certificate No. 151, 9-30-44)

Hayes, smooth contour wheels models 3650A and 3650M; 36 in.; approved static load per wheel 8200 lbs. (Type Certificate No. 101, 11-7-44)

Hayes, smooth contour wheels models 5600A and 5600M; 56 in.; approved static load per wheel 30,000 lbs. (Type Certificate No. 101, 11-7-44)



Kanzler

Ferguson

C. E. Scott, for eleven years Eastern manager of Haskelite Mfg. Corp., has resigned from that company to operate C. Scott Co., Inc., 155 East 44th St., New York, handling veneers, plywood and kindred products.

Howard S. Cullman, vice-president of Cullman Brothers, Inc., and Tobacco and Allied Stocks, Inc., has been elected a director of Aeronca Aircraft Corp.

Lou G. Raiche, formerly director of quality of the Curtiss-Wright Corp., Airplane Division, has been appointed factory manager of that division's Buffalo plant. Paul N. Pierce, assistant director of quality, will take over Raiche's former duties until a new appointment is made.

Irving B. Babcock, president of Aviation Corp., and George E. Allen, vice-president and secretary of Home Insurance Co., New York, have been elected directors of Consolidated Vultee Aircraft Corp.

Alexis R. Stocker, director of foreign relations of Fairchild Engine & Airplane Corp., has been granted a six months leave of absence. Gunnar Eriksson has been appointed acting director with headquarters in Washington.

W. C. (Bill) Miles has been appointed superintendent of maintenance for Essair Inc. He was formerly general superintendent of the Warner-Robbins Army Air Depot, Warner-Robbins, Ga., and prior to that served as superintendent of maintenance for Delta Air Lines.

James G. Scarff, formerly vice president and director of Harriman Ripley & Co., New York, has been promoted to full colonel. He is responsible for the purchasing activities of the Procurement Division, Air Technical Service Command.

L. V. Bedell, assistant manager of Sperry Gyroscope's Nassau plant, has been appointed manager of Sperry's Electronics plant at Garden City, L. I. G. J. Parker, chief industrial engineer, will succeed him at the Nassau plant.



Smith

Moreland



James F. Good, recently factory superintendent of the Allentown division of Consolidated Vultee Aircraft Corp., has been transferred to the Miami division in a similar capacity. John A. Smithers, formerly of the Allentown and Stinson Divisions, has been made assistant production control superintendent of the Miami division.



Mattoon

Thomson



Latta

Gillies



Newcomb

Holmes

Howard Holmes, formerly in charge of the service department of Simmonds Aerocessories, Inc., New York, has been promoted to sales manager. Russel Newcomb, advertising manager since 1941, has been named advertising and sales promotion manager.

Leon H. Joseph, with Freedman-Burnham Engineering Corp., Cincinnati, two and one half years, has been elected treasurer.

Ralph J. Cordiner, assistant to the president of General Electric Co. 18 months, has been elected vice president and assistant to the president with general administrative duties.



Thomas

Good

M. P. Ferguson, a vice president of Bendix Aviation Corp. at South Bend, and Ernest Kanzler, Detroit, chairman of Universal C.I.T. Credit Corp., have been elected directors of Bendix.

Eugene E. Wilson, vice chairman of United Aircraft Corp., has been awarded a 15-year service pin.

William R. Robbins, assistant controller, has been elected general accountant of United Aircraft Corp., East Hartford, Conn., succeeding Frederick E. Burnham, resigned.

Hayward C. Thomas, president of Clarke Aero-Hydraulics, Inc., Pasadena, has been elected president of the Aircraft Parts Manufacturers Association, succeeding T. T. Arden, president of Grayson Heat Control, Ltd., who continues as a director.

B. A. "Bud" Gillies, for 10 years a vice president of Grumman Aircraft Engineering Corp., has joined Ryan Aeronautical Co., San Diego in the dual capacity of assistant to the president and director of flight and service.

L. M. Bach, with Lockheed Aircraft Corp. since 1934, most recently as general works manager, has been promoted to vice president in charge of manufacturing. D. J. Haughton, his assistant, has become assistant to the vice president in charge of manufacturing.

William Richard Latta, recently public relations counsel to the California State Legislature's Aviation Interim Committee and previously public relations director of Harvey Machine Co., and Victor Hugo Halperin from the moving picture industry have formed the public relations firm of Latta and Halperin. They are now making a survey of airport and air cargo possibilities prior to launching a campaign for a large post-war airport project.




Bach

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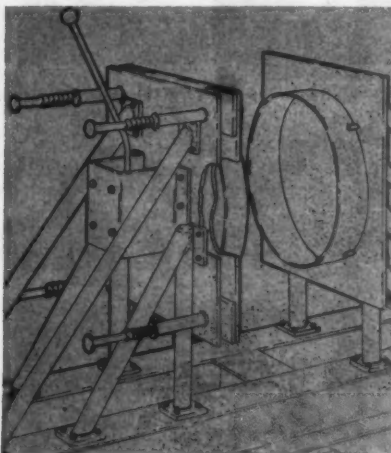
Consultants to the Industry

664 N. MICHIGAN AVE. CHICAGO 11, ILL.

Charles S. Mattoon, for 18 years director of industrial relations of the Airplane Division of Curtiss-Wright Corp., Buffalo, has joined the Weatherhead Co., Cleveland, as industrial relations director.

James Thomson, formerly foreign service supervisor and head of the technical section of the service department for Curtiss-Wright Corp., Propeller Division, has been appointed to the military programs staff of that division, and will handle export liaison and contacts with foreign customers.

Ed. S. Moreland, with Pesco Products Co., Cleveland, for three years, has been promoted to general sales manager. Al E. Wilson has been named assistant sales manager of the automotive division, and Ray G. Holt has been transferred from engineering to the sales department as a field representative. C. M. Smith, formerly with Higgins Aircraft, has joined Pesco as a field representative.



Tire Remover—Demounting beaching gear tires for PBM Mariner flying boats is accomplished in a fraction of the time formerly required at The Glenn L. Martin Co. with this device. It consists of two pressure rings mounted in an upright position on steel plates, one of which is fixed and the other movable. The tire is rolled between the rings, deflated, and squeezed as pressure is applied through an hydraulic jack, removing the bead from both wheel flanges at once. The operation takes only from one to seven minutes.



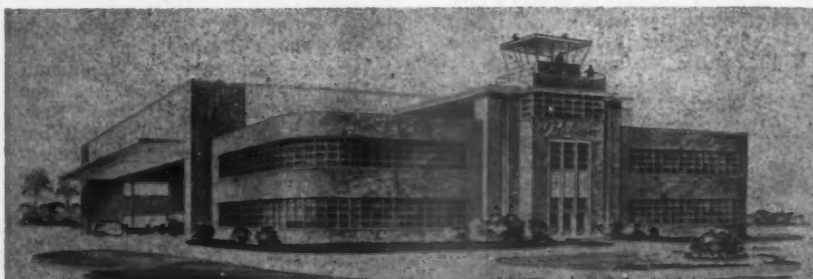
Turns Corners—This unusual screw driver devised by Bertie Shelley Reynolds of Beech Aircraft Corp. makes possible the use of power on a universal joint through the addition of a "T" handle to gain better control at the driving head. It allows angles up to 45 degrees, and can be used anywhere that a filister head screw is used.

Menasco Profit \$226,845

Menasco Manufacturing Co., Burbank, Cal., in its year-end statement to stockholders reported sales totaling \$16,619,330 in 1944, more than double the \$7,763,416 reported in 1943. The 1944 profit of \$226,845 was equal to 25c per share.

The company recorded a production gain of 155 per cent in 12 months, with a 47 per cent increase in direct manhours. It is engaged in building hydraulic landing gear for aircraft. Working capital in the 12-months' period increased from \$668,330 to \$1,081,510.

From the \$16,619,329 received from sales, \$3,586,807 was provided for federal, state and local taxes and refunds to the government under the renegotiation act, leaving available income of \$13,032,521.



Packard's New Hangar-Lab—This architect's sketch shows the hangar and modern engineering laboratories being built at Willow Run for Packard Motor Car Co. These new facilities will let Packard better coordinate the two phases of its specialized engine work for the Army Air Forces Air Technical Service Command, the company claims.



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Manufacturing Roundup

Ryan Manifold Backlog 'Way Up

New contracts expanding schedules on exhaust manifold systems for the C-54 Sky-master and P-47 Thunderbolt have raised the backlog figures of the exhaust manifold division of Ryan Aeronautical Co. to more than \$13,000,000. T. Claude Ryan, president, announced today. The latest C-54 order is for \$1,302,551. The amount of the P-47 order was not announced.

P-47 Production Almost Doubled in '44

Republic Aviation Corp. reports delivery of 54,579,200 pounds of airframe weight to the Army Air Forces in 1944, compared with 29,200,500 pounds in 1943. This represents 6,989 P-47 Thunderbolts accepted and spares equivalent to an additional 1,539 in 1944 as against 3,900 planes and spares equivalent to 735 in 1943. Daily production averaged 23.43 units in 1944 as against 15.45 units the previous year.

McDonnell Making B-29 Cabins

Complete pressurized cabin sections for the B-29 Superfortress are now in production at the Memphis plant of McDonnell Aircraft Corp. with delivery of the first section expected by March. Parts for the sections are fabricated at the McDonnell-St. Louis plant, and the completed sections will be delivered to Martin-Nebraska for final assembly.

Ranger Producing Rocket Motors

The Ranger Aircraft Engine Division of Fairchild Engine & Airplane Corp. is now producing rocket motors for the Navy. Peak production is expected to be reached within the next two months and will be maintained at that level through 1945.

Goodyear Organizes Vet Division

A war veterans' employment division headed by Charles Jones, a veteran of two years' service with the Marine Corps in World War I, has been organized by Goodyear Aircraft Corp. The company plans to return employees to their former positions, or to comparable posts, with progress from that point on depending upon merit.

1st P-38 at Convair-Nashville

The Nashville Division of Consolidated-Vultee Aircraft Corp. reports completion of its first production P-38 Lightning. The ship is now in test flight. In addition to tooling for P-38 production, the Convair Nashville Division built a number of P-38 wing center sections during 1944 equivalent in man hours to more than 100 complete P-38's under a Lockheed assistance program.

Feeder Shop for Convair-Nashville

A feeder shop for the assembly of small parts has been opened by the Nashville Division of Consolidated Vultee Aircraft Corp. in Dickson, Tenn., in order to utilize manpower in that area.



Double Duty—Burned out fluorescent light tubes, hitherto unsalvageable, are now being used by the Glenn L. Martin Co. to mold plastic rods for tool handles, stiffeners, and other purposes. One end of the tube is cut off and a liquid Catabond or Catevar thermosetting resin poured in. Tube and plastic are then placed in an oven for curing. After curing, the glass is broken and chipped off leaving a perfect rod which requires a minimum of polishing and can be cut to length as needed.

Luscombe Opens New Plant

Luscombe Airplane Corp. has taken over a three-story building in Trenton, N. J., to meet Army and Navy demands for increased output. The new facilities in which manufacturing operations have already commenced will add more than 30,000 square feet of manufacturing space to the company's plants.

Catalog of Adhesives

The aeronautical division of B. F. Goodrich Co., Akron, has published a new 56-page catalog of its complete line of adhesives, coatings, primers and sealing compounds for the aviation industry.

Movie Shows Couplings

Aeroquip Corp. has issued a 16 mm. sound color film showing actual aircraft and field demonstrations of the quick-detachable features and replacement operations covering its self-sealing couplings and flexible hose lines and fittings. Running time is 10 minutes. Prints may be obtained by writing Clarke H. Field, Aeroquip Corp., Jackson, Mich.

Incorporations

ATHOL MOTOR AIR LINES, INC., Cambridge, Mass.; 100 com. shares no par value. Ellis Goldin, Brookline; Forrest C. Hemeon, Medford; and Charles Redler, Newton.

CARGO AIRLINES, INC., Wilmington, Del. Capital, 200 shares, no par. Principal office: Corporation Service Co., Wilmington.

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Army and Navy Give Points On Airport Snow Removal

Experience Gained This Winter is Real Test of Equipment

By SYDNEY CARTER

ADEQUATE PREPARATION for removing snow from airport runways and aprons is essential to the maintaining of transport schedules. Never has this been more strikingly demonstrated than during the last few months when unexpectedly heavy storms disrupted service at some of the major flying fields, and gave rise to proposals such as that of A. M. Byers Co. to incorporate hot water lines in the runways to melt the snow as it fell.

To the men in the Public Works Branch of the Navy and the Repairs and Utilities Branch, Military Construction Division of the Army, who are responsible for planning snow removal for the two services, such extreme proposals are neither practical or necessary. They point out that snow melting lines would not only be expensive, but that they would impose added strains on the runway surface, and that in the case of prolonged storms in sub-zero areas an almost unlimited supply of heat would be necessary for such a system to prove effective.

As opposed to this they point to their own experiences in keeping airports throughout the world open with the same or modifications of the same equipment which has long been used to clear roads and highways. This includes front mounted blades on heavy trucks or trucks that can be loaded to give them weight; motor graders; undermounted truck blades; Sno-Gos and similar rotary plows, both with and without loaders attached; conveyor type loaders; dump trucks; rollers and sanders. The Army also makes some use of reversible blades which can displace to either right or left although it doesn't recommend them for airfield use, V-blades which are normally used as one-ways in airport service, wing plows or auxiliary blades which are generally mounted on the right side and are useful for leveling and widening snow banks, Roto-Wings—wing plows with a propeller blower at the end to disperse the snow, Roto-Blades which consist of one-way blades with propeller blowers at the ends, power shovels and cranes, tractor mounted bulldozers and angle dozers, bullclam shovels for cleanup of corners and widening, and front mounted tractor brooms for limited cleanup.

While some of this equipment such as reversible blades, V-blades, bulldozers and angle dozers is used only because it happens to be available, and other items such as power cranes and shovels are pressed into service only in emergencies, most of the remaining pieces play a part in a well integrated snow removal program, and should be available and ready for service in sufficient quantity and of adequate size to meet expected conditions.

The question of how much equipment

is needed depends on the location of the airport with the Army following a general rule that there be enough so that not more than two or four inches can accumulate between rounds of the principal runways. Within the United States one inch per hour or at most two inches per hour can be taken as a maximum rate of snowfall.

Size of equipment is especially stressed by the Navy, which points out that airport snow removal is a heavy job and will soon break up light equipment, often just at the time when it is most urgently needed to keep up with a storm. This is particularly true of rotary plows which should be heavy enough to tackle packed banks and windrows.

While having sufficient equipment of the right type on hand is essential to keeping an airport open, there are many other factors that enter into the planning and preparation of an efficient snow removal program, and the time for most of these factors to be considered is in the summer before the snow starts falling. At present the Army is preparing a manual on the organization and planning of snow removal squads for use at Army bases, in which the need for pre-season preparation is stressed. Such preseason plans include figuring methods and sequence of operations in advance, taking stock of what equipment will be available and how it will be used, designating the width to which runways will be cleared and allowing added width for storage in early storms so that snow banks won't creep up on the runways as they reportedly did at Pittsburgh this winter—in this connection a table is being prepared showing added widths which should be allowed at the beginning of the winter for different width runways and various expected total snowfalls—organizing and training snow removal crews on the same basis on which fire fighters are organized—even mock drills, particularly with rotary equipment, are recommended, providing for operators and relief crews for 24-hour duty, and setting aside closed, heated spaces for storage and servicing of snow removal equipment on a 24-hour basis.

Both the Army and the Navy stress the importance of keeping up with the storm. Drifting, freezing, and too deep snow for the equipment are the principal problems in snow removal, and the only way to beat them is to start when the storm starts and keep going until all snow has been pushed back and leveled in its final position. This involves having equipment ready for instant use—plow frames installed, plows blocked up at the proper height so trucks can run right in and attach them, and shoes or rollers adjusted to the right clearance—having sufficient spare parts available, and having crews alerted and ready to go into action.

Other factors of preseason planning should include designating storing and dumping areas and special preparations. The Navy recommends clearing from 100 to 200 feet on either side of the runways as a precaution both against high banks and flooding runways with slush when

the thaw sets in, and suggests that these strips be graded and packed to permit the use of snow removal equipment during the summer months. To be suitable, they should permit a car to travel 30 miles an hour during the summer. The Navy also believes the possibilities of snow fences from 300 to 500 feet off the runways should be investigated, although the Army believes that such fences would have to be placed too far from the runway to be effective.

A typical sequence of operations used by the Navy once a storm starts is: (1) clear runway to be used and adequate taxiways or approaches; (2) clear field installations such as landing platforms; (3) clear aprons as far as necessary; (4) clear remaining runways and taxiways; and (5) remove all snow possible with dump trucks.

A typical plan for clearing runways is suggested in the Army manual. First a slow one-way blade plow clears a strip about 12 feet wide at either side of the landing lights. Next a target is set up at the end of the runway, lighted for night operation, and a leader, either a car or plow in two-way radio communication with the control tower, starts down the center of the runway followed by six or seven high speed one-way blade plows in echelon formation with a Roto-Wing in the final position of the echelon. This group makes as many circuits of the runways as are necessary to clear it to the desired width,—the Navy finds that up to 200 feet a single echelon can do the job but that added circuits are required for greater widths—and then keeps on repeating for the duration of the storm. When it comes to the strip of marker lights, the echelon splits, half going to the right and half to the left and leaving but a single windrow which is picked up by a rotary plow. Big rotaries are also used to widen the cut at their leisure, and finally the banks are leveled—a maximum height of two and a half feet should be maintained immediately adjacent to the runway—with wing plows and rollers.

One of the greatest problems in clearing runways is that constituted by marker lights, and the development of a truly flush light might do more to aid the snow removal problem than any new type of snow removal equipment. Present flush lights, even the connections for the so-called snow lights that are constantly moved up on top of the snow, project about two inches, and plows must go around them not only to avoid smashing the light, but to avoid damage to the plow. In general advance preparations should include a supply of wands or markers to be placed on all lights and other projections before the snow crews go into action.

At some airports in areas where there is a constant freeze throughout the winter rolling instead of plowing the snow is used. The Buffalo airport has tried this system with excellent results. The main advantages of rolling are that the equipment is relatively cheap and the operation does not leave any high banks at the sides of the runways which must be removed or leveled. However, rolling also presents many disadvantages and is not recommended by the Army or Navy, particularly for runways to be used by heavy aircraft. Among the disadvantages are the fact that the packed snow turns to ice and must be constantly sanded, the unreliability of such a runway for con-



tinuous use by heavy aircraft, and most serious of all, the condition arising when the spring thaw sets in and the airport has to be closed while the runways melt clear, or the ice and slush has to be removed with the same equipment which would far more easily have been used to keep the runways clear all winter.

At present the use of rolling appears to be mainly limited to light plane airports and airparks in Northern states where no schedules have to be maintained, and road snow removal equipment no longer needed on the highways might be pressed into service to remove the ice and slush accumulation once the spring thaw sets in.

Curtiss Gets Improved Rating

An approved quality control rating has been assigned to the Curtiss-Wright Buffalo plant by the Army Air Forces. With the receipt of this rating duplication of inspection by Air Forces personnel during detail fabrication will be eliminated.

Keep It Clear—As soon as the snow starts falling, trucks with high speed plow blades move out in echelon formation (top) to clear the runways at an Army air base. The main army use for rollers (left center) is to pack down storage areas, but some commercial airports with an all-winter freeze use them to form snow runways on top of the regular hard surfacing. The Sno-go (right center) is a rotary plow which cuts the snow with its augurs and blows it off to the side. Blowers also are used on the Roto-wing, (bottom) to aid dispersal and avoid high banks at the side of the runways.



Speakers' Table at California Conference—

Featured speakers at the luncheon in connection with the first aviation conference to be held in California, an event which is expected to take in several western states this year, were, left to right—Kenneth McDonald, manager of the San Francisco chamber of commerce aviation committee; William Sample, Jr., of the San Diego chamber of commerce; Mayor Patrick J. Maher of Santa Barbara; Mayor Fletcher

Bowron of Los Angeles; Lloyd Wright, chairman of the Governor's Aviation Advisory Committee; Richard A. Dick, general traffic manager, Western Air Lines; Tex Rankin, president of Rankin Aeronautical Academy; Lowell H. Swenson, manager of the National Aeronautic Association; Theodore C. Coleman, vice president of Northrop Aircraft and general chairman of the conference; and C. Edgar Goyette, secretary of the Tucson, Ariz., chamber of commerce.

Continental Considers

Buying Stratocruisers

Robert F. Six, president of Continental Air Lines, has revealed that his company is negotiating with the Boeing Aircraft Co. with a view to placing orders for Boeing Stratocruisers. The Stratocruiser is the airliner version of the Army's new C-97 transport.

Six said that the Stratocruisers, if purchased, would be used on the Denver-Kansas City-Chicago and Denver-Kansas City-St. Louis routes for which Continental Air Lines recently filed application with the Civil Aeronautics Board.

The Stratocruiser seats 100 passengers. Its use would allow three-hour service between Denver and Chicago and two-hour 45 minute service to St. Louis.

Cargo Plane Mark Set

Production of C-46 Commando cargo planes in January at the Buffalo plants of Curtiss-Wright Corp., Airplane Division, exceeded output in any previous month by

13 percent. Combined with scheduled output for February, it will wipe out all production loss occurring in December as a result of inventory work.

More Privateers

A new Navy contract, the second within the last 10 days, for \$45,000,000 worth of PB4Y-2 Privateer patrol bombers has been announced by Consolidated Vultee Aircraft Corp. The two contracts, which total \$85,000,000, are in addition to previous Navy orders, and will extend production of the four-engine bombers into July, 1946.

Facilities Increased

Defense Plant Corp. has executed a contract with the Aviation Corp. for equipment in a plant at Williamsport, Pa., at a cost of approximately \$600,000; and has increased its contract with Wright Aeronautical Corp. to provide additional plant facilities at Woodridge, N. J., at a cost of approximately \$2,500,000.

Army, Navy to Require Heat De-icing Systems

The Army Air Forces are now requiring the inclusion of heat de-icing systems, developed in the laboratories of the National Advisory Committee for Aeronautics, in some new designs of both combat and transport planes, and the Navy plans to build such equipment into its new transports. Under the new system air heated by the engine exhaust is circulated through ducts in the wings and tail surfaces, and even windshields are similarly de-iced by using a double pane construction and passing the air between the panes. NACA engineers have also found out that heat affords the best method of protecting engine parts and propellers against icing, and have discovered that icing of engine air intake systems through the carburetors may occur in clear air at temperatures as high as 50 or 60° F. Electrical heat de-icing of propellers has likewise proved more effective than the paste and fluids previously employed.

Pay Demand Rejected

A five-member panel of the War Labor Board has recommended rejection of United Automobile Workers CIO demands for raising the hiring rate at the Glenn L. Martin Co. from 60 cents to 65 cents an hour with automatic 5-cent increases every 30 days until a rate of 80 cents instead of 75 cents at present is reached. Also denied were the union's requests for an increase in the minima and maxima of the company's labor-grade rate ranges, an increase from 5 percent to 10 percent of the cash bonus for night shift work, and the abolition of the company's present employee merit rating system. The panel approved with modifications a union request for inclusion in the agreement of equal pay for female employees doing equal work, and a provision against laying off employees to avoid overtime. Also approved was a change whereby employees with five years continuous service will be allowed 12 days vacation with pay after 2,000 hours work in the preceding calendar year instead of ten days as at present.

262 Helicopter Pilots

Sikorsky Aircraft division of United Aircraft reports that there are now 262 helicopter pilots, 67 of which were trained by Sikorsky. Military training schools have since taken over such pilot training. The Army's Chanut and Wright Fields have graduated 85 pilots, and the Coast Guard's Floyd Bennett Field has checked out four Army, six Navy, 12 British and 68 Coast Guard fliers. Some 20 Royal Air Force and Royal Navy pilots have been taught on Sikorsky helicopters in Britain.

Auto Firms Busy

By the end of 1944, 40 percent of all B-29 components were coming from automotive factories, and in one month over 3600 major components were shipped to aircraft final assembly lines, according to the Automotive Council for War Production. Total production of aircraft and parts by the auto industry in 1944 was valued at \$4,200,000,000. To date the industry has turned out 81 percent of all gliders, 43 percent of all propellers, 54 percent of all Liberator bombers.

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Consolidated Vultee Reports for Year Net Income of \$12,424,313

Consolidated Vultee Aircraft Corp. reports for the fiscal year ended Nov. 30, 1944, net income of \$12,424,313 or \$8.80 per share on the 1,385,945 common shares outstanding. This was after deducting \$6,500,000 for postwar readjustment, equivalent to an additional \$4.70 per share of common stock. For 1943 net income after renegotiation was \$12,279,801 or \$8.67 a common share after providing \$6,800,000 for postwar readjustment.

A reserve has been established in the 1944 accounts for a possible renegotiation refund of \$18,500,000. This has been made on the same general basis as the actual settlement for the 1943 fiscal year, and for this reason the management expects that no further adjustments for 1944 above the amount already reserved will be required.

Sales of the corporation in 1944 totalled \$960,016,945 compared with \$800,578,354 after final renegotiation for the 12-months period ended Nov. 30, 1943. In 1944 the corporation exceeded all previous records in pounds of airplanes produced, with 131,000,000 pounds delivered against 126,000,000 pounds in 1943. Convair-designed bombers including those produced by other companies accounted for over 60% of the nation's total heavy bomber output last year.

Progressing toward completion, the report points out, is the largest airplane ever designed. As a military transport it will be able to carry 400 passengers. As a postwar commercial plane it can be adapted to accommodate more than 200 passengers on non-stop trans-Atlantic flights.

Within limits strictly regulated by requirements of war-time operations, it is stated, Consolidated Vultee is formulating plans for the ultimate liquidation of war business and for re-entrance into the manufacture and sale of commercial and private planes as well as military aircraft.

Current assets as shown in the balance sheet include: Cash, \$56,938,369; Accounts receivable including \$65,491,155 due from the U. S. Government, \$69,859,310; Advance payments made to subcontractors, \$438,000; Unreimbursed expenditures and fees under CPFF contracts less reserve for possible disallowances of \$3,796,566, \$48,622,561; Work in progress, materials, parts and supplies, \$129,503,184. Other assets are: Investments in securities at cost, \$85,846; Accounts receivable from U. S. under EPF contract, \$2,167,654; Postwar refund on excess profits tax, \$2,085,083; Property, plant and equipment at cost less reserves for depreciation and amortization, \$15,763,257; and Deferred charges, \$1,463,203.

Current liabilities include: Accounts and wages payable, \$91,977,469; Progress payments received on fixed price contracts, \$82,549,848; Federal income and excess profits taxes, \$49,838,451; Accrued taxes other than federal income, \$4,607,958; Liability for refund on 1943 renegotiation, \$18,208,506; Provision for 1944 renegotiation, \$18,500,000. Other liabilities are: Postwar readjustment reserves, contract guarantees and replacement of parts, \$19,600,000; Preferred stock outstanding, \$3,973,965; Common stock outstanding, \$1,385,945; Paid-in surplus, \$8,140,061; Earned surplus, \$28,144,264.

National Aviation Corp. Net Income \$307,187

National Aviation Corp., New York, has just issued its annual report showing net income of \$307,187 for the year ending Dec. 31, 1944, as against \$295,996 for the previous year. Gross income for 1944 was \$384,439 as against \$383,025, and expenses \$77,252 as against \$87,029. The 1944 balance sheet shows gross assets of \$7,225,349 as follows: cash in banks and on hand, \$536,815; U. S. Government securities at cost, \$900,366; stocks in portfolio at average cost \$5,732,516; investment in National Aviation Research Corp. at cost, \$50,000; dividends and interest receivable, \$4,151; deferred charges to expense, \$1,500.

Liabilities and capital are: accounts payable and accruals, \$7,781; reserve for taxes, \$57,978; issued stock exclusive of 30,800 shares in treasury and paid-in surplus, \$6,232,614; and earned surplus since Jan. 1, 1938, \$876,975. Classification of assets on Dec. 31, 1944 shows Aircraft and Accessories, 38.6 percent; airline, 32.2 percent; other, 14.3 percent; cash, U. S. Securities and Receivables, 14.9 percent. Aircraft and Accessories are up 3.1 percent over 1943, and Airlines up 8.0 percent.

Sales Doubled in Year

American Central Manufacturing Corp. has announced total net sales of \$30,903,888 for 1944, as against \$15,015,047 for 1943. Net income for 1944 after provision of \$3,400,000, before taxes, for possible refunds to the government upon renegotiation of contracts, totaled \$699,616 or \$1.97 per share of common stock as against \$351,841, or .98 per share in 1943 after renegotiation. The company also reported that Irving B. Babcock had been elected chairman of the board, succeeding G. M. Williams who will remain active as a director.

Bendix Helicopter Files For 1,400,000 Shares

A registration statement covering the proposed issuance and sale of 1,400,000 shares of its capital stock (50 cents par value) has been filed by Bendix Helicopter, Inc., with the Securities and Exchange Commission. Of the total, 1,000,000 will be offered proportionately to the company's present outstanding capital stockholders at \$1.60 a share on a basis of four new shares for each five held.

Shares not accepted will be sold publicly through Kobbe, Gearhart & Co. and Bond & Goodwin, Inc., both of New York, at \$2 a share with an underwriting commission of 40 cents a share. The company has reserved 200,000 shares for issuance upon the exercise of outstanding warrants at \$1 a share. An additional 200,000 shares will be issued upon the exercise of stock purchase warrants yet to be issued. Proceeds will be used to provide working capital for the development and manufacture of helicopters and other corporate purposes.

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Importance of Ground Time Stressed in Plane Designing

Engineers Advised To Pay More Heed to Operating Problems

THE RELATION of airline operations to transport design must be carefully considered and intensive effort must be directed to arrive at a thorough understanding of operating problems. Adequate attention must be paid to gathering facts of airline operations, analyzing these facts and evaluating them in terms of present and future basic design problems, and to considering the utilitarian features with the technical aspects from the inception of the primary design if proper provisions are to be made in the design so that the plane is suited to the service for which it is intended and proper evaluation of interrelated functions is to be made in the inevitable compromises necessary in a plane. These warnings were given by Edward P. Hall, staff engineer in the Transport Analysis Section, Curtiss-Wright Corp., St. Louis, in a paper presented to the Institute of the Aeronautical Sciences.

To evaluate the multitude of interrelated problems involved in transport plane design, he adds, some yardstick is needed whereby they can be measured relative to each other and to the plane as a whole, and that yardstick is profit-earning capacity, broken down into (1) revenue attracted and (2) cost of operation. Such a criterion may properly replace those heretofore used in judging the worth of a transport such as payload or high speed.

Profit-Earning Grows

Pointing out how the design of an airliner can be affected by this method of attack, Hall demonstrates its application to the factor of speed and reliability of scheduled operation. If the scheduled speed of a transport plane can be increased without increasing the cost of operation, he says, the revenue attracting ability, and therefore the profit-earning capacity of the plane is enhanced. But while scheduled speed is partly dependent on cruising speed, it also is dependent on schedule ground time. If the designer is to provide a plane with the optimum profit-earning capacity, it is therefore necessary that he know just how the plane is going to be used, over what length of trip, etc., before he decides which factors will have the most effect on scheduled speed.

For example, he points out, the average trip length for present-day domestic airlines is 200 miles. To reduce scheduled time by five minutes on such a trip, a plane with a 250-mile-per-hour cruising speed would have to increase its cruising speed by 22.6 miles per hour. It therefore behooves the designer of such a plane to carefully examine the possibilities of reducing ground time rather than trying to increase cruising speed. Such an examination reveals that ground time depends on the following critical operations: unloading passengers, unloading

baggage and cargo, refueling, loading baggage and cargo, food service and departure preparation. It is obvious that scheduled ground time could be reduced by shortening the time required for these operations or by starting them more quickly or by a combination of both; but it is equally obvious that shortening any one operation by itself will result in little or no saving in ground time.

It then becomes apparent that if the plane is designed to permit it, and the airline has a large enough ground crew, all operations except passenger loading could start simultaneously the instant the plane came to rest. But is this desirable? Will the increase in revenue attracting ability be sufficient to offset increases in operating costs resulting from larger ground crews, lower payloads and so forth?

Time for Loading

Then there is the question of time for loading and unloading passengers. Should two doors be provided so that these operations can be carried out simultaneously? Instead, Hall suggests that the passenger problem is primarily one of providing sufficient accommodations within the plane to cause the through passengers to prefer to remain on the plane during a stop. Here the problem is primarily one of making lavatory and lounge facilities adequate and attractive, providing enough room to permit the passenger ample leg room while seated as well as sufficient space to move about and stretch his legs during flight. Connecting the hostess' handset to the local telephone circuit, and providing motion pictures projected on the forward bulkhead are other possibilities.

Time in loading and unloading baggage and cargo can be reduced by improving accessibility and providing adequate segregation of cargo into bins according to destination. Then there is the Air Transport Association suggestion of storage facilities in the cabin for passenger baggage so passengers can take it aboard themselves. If simultaneous loading and unloading is to be accomplished, at least two cargo doors will be necessary, but it is quite possible the increase in structural weight of such doors would be justified.

An examination of these factors, Hall states, makes it apparent that the utilitarian aspects of ground time bear an important relation to the basic plane design. Only by careful consideration of airline operations, he says, can the plane be designed to increase its profit-earning capacity to the airline in this regard.

Just as in the case of scheduled speed, scheduled reliability depends on various factors, the two main ones being delays beyond scheduled ground time and flight cancellations. In general, they are due to the same causes, and merely reflect a matter of degree.

An analysis made of delays on two typical flights for the year 1943, he revealed, show that the plane design is responsible for 90 percent of the loading, 30 percent of the turnaround, 50 percent of the weather, 30 percent of the mechani-

cal, 20 percent of the passenger, 50 percent of the servicing, 70 percent of the searching cargo, 60 percent of the cleaning ship, 30 percent of the clearing ship, 30 percent of the ramp congestion, and 10 percent of the caterer delays.

On one of the two routes the study showed that if delays chargeable to the plane design were eliminated, the airline would have obtained an effective average increase in cruising speed of 4.2 miles per hour for all flights for the entire year.

In analyzing some of the cause of delay chargeable to design, Hall points out that delay due to loading is partly tied up with critical balance conditions, and that the permissible c.g. range and proximity of the disposal load to the c.g. are the principle design factors to be considered in this regard. Delays due to weather, he says, will depend upon the development of suitable equipment to permit all-weather operation, hinting that wartime developments promise great progress in this direction, but warning that such equipment must be considered at the inception of the basic design, and cannot be added as an afterthought.

Mechanical delays, he says, appear to depend to a considerable degree on mechanical perfection. One suggestion he makes, is the possibility of designing parts for a definite life including a safety factor, and replacing them at each major overhaul.

Accessory Failures

A summary of mechanical delays for one of the major airlines for one year shows that 63.5 percent fall in the accessory classification—that is parts purchased by the plane manufacturer over which he has no control other than selection and installation. But, Hall adds, part of the delay time due to accessory failure is chargeable to the plane design, as for example, installation in inaccessible places that requires an unwarranted length of time for removal and repair.

Summarizing the relationship of ground time and ground delay time to speed and scheduled reliability, Hall states that for planes designed to operate on trip segments up to about 300 miles, the reduction of scheduled ground time and ground delay time is of much greater importance than aerodynamic refinement. For trip lengths between 300 and 600 miles the ground and delay time is of about equal importance to aerodynamic refinement, and for trip lengths above 600 miles the gains to be expected through aerodynamic refinement far outweigh the gains to be made by utilitarian improvement.

From Blimps to Planes

Goodyear Aircraft Corp. went through two major conversions in 1944 to meet changing war conditions. Blimp manufacturing facilities, following completion of the airship program, were turned over to production of tail surfaces for the P-38 Lightning, and wings, flaps, elevators and ailerons for the F6F Hellcat. One entire plant, formerly turning out B-26 Marauder wings, was converted to fuselage center sections and empennages for the B-29 Superfortress. In addition, the company built Corsair fighters, wing panels and tail surfaces for the P-61 Black Widow, tail cones for the XR-5 helicopter, and wheels and brakes for most of the airplanes built in this country. A branch plant in Litchfield Park, Ariz., manufactured wings and other parts for the PV-2 Ventura, and modified the PB4Y1 and PB4Y2 Privateer for the Navy.

Over-the-Counter Securities

(Courtesy Merrill Lynch, Pierce, Fenner and Beane)

New Delta Stock Issue For Expansion of Lines

Paving the way for its postwar expansion Delta Air Corp., operating as Delta Air Lines, has announced an issue of additional stock, after paying a 50 cent stock dividend to its old stockholders.

C. E. Woolman, vice president and general manager of Delta, said a prospectus and registration statement has been filed with the Securities and Exchange Commission in Philadelphia for the marketing of 102,424 shares of the company's \$3 par value common stock. The new issue and the dividend bring the total of outstanding shares to 400,000 of 500,000 shares authorized in September, 1940.

The stock dividend, which called for payment on Jan. 25 of one additional share for every two outstanding as of Jan. 10, called for issuance of 99,192 additional shares, and was authorized at a stockholders meeting Dec. 18, at which time it was voted to change from no par value to \$3 par value and put the 102,424 new shares on the market.

In its statement to the SEC, Delta reported a net income of \$149,975 after provision for taxes for the four-months period from July 1 to Oct. 31, 1944, compared with \$156,129 for the same period the previous year. Net income before provision for income taxes was \$514,975 for the four-months' period ending Oct. 31, 1944, compared with \$270,447 in the same period in 1943. Income tax reserves were \$365,000 for the period July 1—Oct. 31, 1944, compared with \$114,318 for the same period the previous year.

Courts & Co., Atlanta is managing the underwriting group for the new stock issue.

Proceeds from the sale of the new issue will be used for purchase of flight equipment, ground facilities, and the general expansion of the company both along present routes and for proposed routes.

Rohr Nets \$2,605,230

Rohr Aircraft Corp. in its fourth annual report to stockholders for the fiscal year ended July 31, 1944, shows earned surplus as \$3,209,666.

Gross sales for the year amounted to \$76,971,680 from which was deducted \$1,900,000 as renegotiation costs. Cost of sales including overhead expenses was listed as \$64,894,013, with profit from operations at \$10,177,667. Net income was listed as \$2,605,230 after provision was made for all taxes. Earned surplus as of Aug. 1, 1943, was \$3,759,841, which was reduced to \$1,039,435 by renegotiation adjustments for prior years and retroactive wage increases. Gross surplus was listed at \$3,644,666. Four cash dividends of 25c per share each and totaling \$435,000 were paid during the year.

Fred H. Rohr, president, said that the company had devoted its energies almost entirely to production of war materials and that no decisions have been made regarding postwar conversion although independent economists and engineers have been making studies of postwar possibilities for the concern.

	February 10		February 17	
	Bid	Asked	Bid	Asked
Airlines				
All American Aviation	10	11	10 1/4	10%
American Airlines Pfd.	called Jan. 15, 1945 @ 106			
American Export Airlines	34 1/2	37 1/2	35	36
Braniff	18%	sale	19	sale
Chgo. & So. Common	14%	15%	15	15%
Chgo. & So. wts.	7	8	7	7 1/2
Continental Airlines	11	12	11 3/4	12%
Delta Air	23	24	23 1/2	25 1/2
Inland Airlines	3 1/2	4	3 3/4	4 1/4
Mid-Continent	9 1/4	9 3/4	9 1/4	9 3/4
National	17%	sale	17%	sale
Northeast Airlines	12	sale	12 3/4	sale
Manufacturers				
Aerona	4%	5	4%	4%
Air Associates	13%	sale	13%	sale
Aircraft & Diesel	1%	2 1/4	1%	2 1/4
Alrean Mfg.	7 1/4	sale	6%	sale
Airplane & Marine	5%	6 1/4	5%	6 1/4
American Airplane Mfg. & Supply	3%	4	3%	4
Central Airports	7%	8	7%	8
Columbia Aircraft	1 1/4	3 1/4	1 1/2	3 1/2
Continental Aviation	4%	5	4%	5
Delaware Aircraft Pfd.	1%	1 1/4	1%	1 1/2
General Aviation Equip.	1%	1 1/4	1%	1 1/2
Globe Aircraft	1%	1 1/4	1%	1 1/2
Harlow Aircraft	1%	1 1/4	1%	1 1/2
Harvill Corp. common	2 1/4	2 1/2	2 1/4	2 1/2
Interstate Aircraft & Eng.	12	12 1/2	12%	13 1/4
Jacobs Aircraft	4%	sale	4%	sale
Kellett Aircraft	1 1/4	1 1/2	1 1/4	1 1/2
Kinner Motors	1.35	1 1/4	1 1/4	1 1/2
Liberty Aircraft	13 1/2	14	14%	14 1/2
Luscombe	1%	2 1/4	1%	2
Menasco Mfg.	1%	1 1/2	1%	1 1/2
Northrop Aircraft	7 1/4	7 1/2	7 1/4	7 1/2
Piper Aircraft common	4%	sale	4%	sale
Piper Aircraft Pfd.	4%	5	4%	5
Rohr Aircraft	7 1/4	8	8	8 3/4
Std. Aircraft Products	55c	70c	55c	70c
Taylorcraft common	2 1/4	2 1/2	2 1/4	2 1/2
Taylorcraft Pfd.	6%	7 1/4	7 1/4	8
Timm	50c	60c	50c	60c
Utd. Aircraft Prods. Pfd.	18 1/2	19 1/2	19	20

Prop Order Increased

The American Propeller Corp., Toledo, O., announces that it has been awarded contracts by the AAF Air Technical Service Command for additional propeller blades for Army and Navy planes. One contract calls for blades for the Bell P-63 Kingcobra. The other contract involves blades for use on two of the Navy's latest developments—a new fighter and a Curtiss Scout plane.

Brewer Awards Given

Frank G. Brewer awards for outstanding contributions to aviation in the State of Alabama were presented by Rep. Jennings Randolph (D., W. Va.) at Birmingham, Ala. The State of Alabama award was presented to Maj. H. S. Banton, Deputy Wing Commander, in recognition of the contribution of the Civil Air Patrol in the training of cadets. The City of Birmingham trophy was awarded to Prof. John R. Patty, of Howard College, Birmingham, for his work in directing the model plane program, Junior Air Carnivals and his work in teaching CAP cadets in night school courses. Rep. Randolph told his audience that Congress, during 1945, will undoubtedly pass airport legislation which will embrace a nation wide construction program of Federal, State and Municipal air fields.

DPC Authorizations

Allison Gets 12 Million for Retooling

The Defense Plant Corporation has announced an additional \$12,000,000 commitment for retooling and machinery in the plants of Allison Division of General Motors Corp. now engaged in the production of jet-propulsion engines. The new engines will begin coming off the assembly line of the Maywood plant some time during the first quarter of 1945, according to E. B. Newill, Allison general manager.

CONSOLIDATED-VULTEE AIRCRAFT CORP., for additional equipment at a plant in San Diego costing approximately \$280,000; overall commitment of approximately \$23,450,000.

FAIRCHILD ENGINE & AIRPLANE CORP., for plant facilities at Jamestown, N. Y., costing approximately \$525,000.

AEROJET ENGINEERING CORP., Pasadena, for additional equipment at a plant in Azusa, Calif., to cost approximately \$200,000.

NORTHWESTERN AREONAUTICAL CORP., St. Paul, for equipment at a plant in St. Paul to cost approximately \$70,000.

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Financial Notes

DOAK AIRCRAFT CO., INC., Torrance, Cal., declared a dividend of 10 cents a share on common stock payable Jan. 3 to holders of record Dec. 20. Edmund R. Doak, president and chairman of the board, reported the largest backlog of unfinished business since the firm was organized in 1940. This is the first dividend declared on the corporation's common stock.

BENDIX AVIATION CORP. stockholders have been notified by Ernest R. Breech, president, that contingency funds for postwar conversion and development have been reduced by \$2,499,065 as a result of action taken by the War Department Price Adjustment Board on the company's war contracts for the fiscal year ended Sept. 30, 1943.

In the financial report to stockholders for the year ended Sept. 30, 1943, the company stated that \$44,000,000 had been set aside as a refund to the government, based on an agreement on contract renegotiation with one member of the Price Adjustment Board. This PAB official assured Bendix officials, Breech stated, that the agreement would be approved by the entire PAB Board.

CONSOLIDATED VULTEE AIRCRAFT CORP. declared a dividend of 50c a share on common stock payable Feb. 15 to stockholders of record Feb. 2. The regular quarterly dividend of 31 1/4c a share was declared on preferred stock, payable Mar. 1 to stockholders of record Feb. 15.

AERONCA AIRCRAFT CORP. paid a 10c dividend on its common stock Dec. 30 to stockholders of record Dec. 23.

Incorporations

AIRCRAFT ENTERPRISE CORP., Bridgeport, Conn.; shares subscribed for: 15 com., on which \$1,000 cash and \$500 in property have been paid. President—Charles G. Miller, Jr., 5 shares; vice president, Harold E. Darling, 5 shares; secretary, W. Parker Seeley; treasurer, Fred H. Lovegrove, 3 shares. Directors are president, vice president, and treasurer.

WEE AVIATION CO., Simsbury, Conn.; Capital stock, \$50,000 divided into 2,500 shares of \$20 each. Commence business with \$2,400. Incorporators: George Markland, R. J. Wild, E. R. Willis, and Earl W. Hyson, Jr.

AVIATION OF AMERICA, a corporation with authorized capital of \$100,000 which is to engage in various phases of aviation industry from bases located between New Jersey and Florida, has been organized at Charlotte, N. C. A. F. Polk, of Charlotte, is one of four principal stockholders. Other incorporators include E. A. Hollerson, of Charlotte and New Jersey; William Powell of Nenoir, N. C. and Joe Jacobs, of Gastonia, N. C. The company plans to establish aircraft servicing centers, sales agencies, and training organizations at various airports where franchises can be obtained.

ELIZABETH CITY AVIATION, INC. of Elizabeth City, N. C. has been organized to deal in and operate airplanes. Authorized capital stock will be on the basis of 500 shares, no par value. W. W. Foreman, R. M. Graves, W. B. Foreman, all of Elizabeth City, and others have subscribed 66 shares.

NEW ENGLAND AVIATION, INC., Southbridge, Mass.; 5000 shares, no par stock; Incorporators: John M. Wells, Benjamin B. Follette, Jr., and Richard A. Mahler.

SOLAR AIRCRAFT CO. has declared a dividend of 15 cents per share on \$1 par value common stock, payable March 15, 1945 to stock outstanding and of record Feb. 23, 1945.

AIREON MANUFACTURING CORP., formerly Aircraft Accessories Corp., showed a net profit of \$402,452 for the six months ended Oct. 31, 1944, according to a proxy statement sent to stockholders. The announced net equals 58 cents on the 714,919 common shares, and is after \$1,100,000 deduction from sales as provision for renegotiation.

MID-CONTINENT AIRLINES has announced that unaudited reports indicate operating revenues of \$1,981,048 for the calendar year ended Dec. 31, a 70 percent increase over the \$1,169,827 in operating revenues for 1943. Net profit for 1944 after taxes was \$138,548, compared with \$170,644 in 1943.

BEECH AIRCRAFT CORP. has increased its capital stock from 500,000 to 1,500,000 common shares. Par value will remain \$1 a share.

Classified

SALES MANAGER. Established airline has an immediate opening for a qualified Sales Manager with excellent background in airline Traffic and sales promotional work. In reply please outline educational and business background, draft status, salary desire, and how soon available for employment. All replies will be treated confidentially. Address replies Box 423, American Aviation, American Building, 1317 F Street, Washington 4, D. C.

HELP WANTED—MALE. Aeronautical Engineers: Jr. and Sr. Design Engineers; Structures Engineers; Aerodynamicists; Mechanical Engineers interested in aviation; Jr. and Sr. Draftsmen. Now building gliders for war, later cargo and pleasure-craft. Wire or write immediately. M. N. Whitehead, Vice Pres., Laister-Kaufmann Aircraft Corp., 6376 Clayton Road, St. Louis 17, Missouri.

FORMER PILOT holding dispatcher and mechanic certificates with over 15 years airline experience desires overseas assignment as representative of airline or manufacturer. Age 47, sober, speaks three languages. Address Box 424, American Aviation, American Building, Washington 4, D. C.

AVIATION SUPPLIES. New Tires; All sizes stocked. New Sensenich Propellers, Spark Plugs, Storage Batteries, Windshield Pyralin, Scott tailwheel assemblies, Dopes, Fabric, Instruments. Rush deliveries from warehouse stocks at Pittsburgh, Richmond, New York. Bob Trader Aero Supply, Municipal Airport, Pittsburgh, Pa.

WATCHES WANTED. Broken or usable, all kinds, even Ingersoll, highest prices paid for jewelry, rings, spectacles, alarm clocks, razors, cigarette lighters, gold teeth, etc. Cash mailed promptly. Lowe's Holland Bldg., St. Louis 1, Mo.